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Rubens.

THE Antwerp fête, with its banners and public meetings, concerts, and processions of allegorical figures, has done honour to the memory of the Belgian master in a *bravura* style not altogether unsuitable to the subject and occasion. It may be permitted us to give few words, in a calmer and more critical though not less appreciative spirit, to the consideration of the genius and character of the painter who, if Antwerp is to be called "the Venice of the North" (but we have heard that title given to several cities), might in that connexion certainly be termed "the Titian of the North."

It could, of course, only be in that connexion that the expression could be justified. Now and then, in his quieter moments, Rubens does remind us of the feeling of Titian, in such matters as his treatment and grouping of heads in the Pharisees of the tribute-money picture, or in the painting of "the four Fathers of the Church." But, as a general rule, there is little in common between the vigorous but overbold, hasty, and somewhat "slap-dash" style of Rubens, and the equally vigorous but rich and full style of the great Venetian painter. Titian combined the highest power with finish and repose, and a completeness and balance of feeling that have been attained by no other painter: Rubens had a force and vigour second, perhaps, to none in some respects, but which has sometimes received credit beyond its due simply because it is force unrestrained by other qualities, and to the uncritical spectator appears more forcible in consequence. As to colour, of course no one has ventured to compare Rubens with the greatest painters of the Venetian school; while he has been subjected to much depreciatory criticism in recent times (among English critics especially) for his want of real feeling in the treatment of great subjects, which he seems to have made too often merely the occasion for feats of drawing and grouping of a somewhat violent and *outré* character. In one half of this criticism Titian would also find condemnation: he also painted the most pathetic subjects for the sake of the painting rather than of the subject; he, like Rubens, was emphatically an artist for art's sake. But then with Titian the art is so complete that we are tempted to forget the want of feeling; whilst in the works of the Flemish painter his indifference to the essential feeling of his subject is too often somewhat rudely forced upon us.

It is owing to considerations such as these that there has been in artistic circles in this country, and perhaps elsewhere, a certain coldness of feeling towards the *fête* just held in honour of the painter,—a doubt whether a painter so essentially materialistic merited so much enthusiasm. Granting the reasonableness of such a feeling, there is another side to the matter; and the mental review of the achievements and powers of Rubens, naturally suggested just now, leaves an impression of masculine energy and power of production which, with whatever drawbacks, is too remarkable of its kind not to deserve something more than the doubtful and grudging acknowledgment, or the positive and almost angry dislike, which a modern sentimental school of critics have accorded to it. Lady writers on art, we have observed, generally express dislike for Rubens; and some eminent critics whose temper is emphatically effeminate fall in with them thoroughly. They think, apparently, that though it be excellent for a painter to have a giant's strength, it is tyrannous in him to use it as a giant; to be, as it were, always exhibiting his muscle. And it must be conceded that modern critics are not alone in their opinion. In the very interesting collection of papers and correspondence relating to Rubens, published a few years since by Mr. Sainsbury, of the State Paper Office, there occurs a letter from Sir B. Gerbier to Mr. E. Norgate, about some decorative paintings to be executed for Charles I., concerning which there was some question whether Rubens or Jordaens should be commissioned to paint them; and Gerbier observes,—"they are both Dutchmen, *and not to seeke** *to represent robustrous boistrous drunken-headed imaginary gods*, and of the two Sir Peter Rubens is the gentilest in his representations, the landskipps more rare, and all other circumstances more proper." Sir Peter thus gets a compliment certainly (Gerbier seems to act as his friend in the correspondence), but it must be admitted to be a very left-handed one; but some allowance must be made for the tone of it when we consider the French taste of the period in England, and the then prevalent opinion about the Dutch as the representatives of everything gross and uncouth. But the "robustrous" gods of Rubens, at any rate, deserved that epithet, and had something in them far superior to the sprawling saints of Verrio and Laguerre, which formed the delight of the second Charles's reign. And when Rubens came to the treatment of subjects of somewhat more intellectual interest and meaning than the loves or jealousies of the pagan gods, though he certainly has nothing in them for minds of a contemplative and thoughtful turn, it must be said he is eminently manly and healthy in his feeling. If there is no true sentiment, there is at the same time no false sentiment, and there is a sumptuousness of composition and execution which tallies precisely with the painter's bold and self-reliant assertion,—"I never wanted courage to undertake any design, however vast in size and diversified in subject." This sturdy self-reliance is, in itself, an element of genius, the want of which has been the chief cause of failure in some cases of really gifted men, who seemed to have every requisite of success except belief in themselves. We feel that Rubens, like Hogarth, is troubled with none of this diffidence. Let the subject be a medley of drunken satyrs, or an allegory of the triumph of religion, Peter Paul Rubens is ready to put the whole force of his pencil to either, and make a powerful composition out of it, without the slightest difficulty as to the number or position or attitude of the figures; no tough problems of drawing need stand in the way; he is prepared for them all.* It is curious, in looking at such a design as his "Destruction of Idolatry" and "Triumph of the New Law," to see how thoroughly he throws himself into the pictorial capabilities of the subject without apparently any attempt to realise its moral sentiment. The first-named is a most forcible design, with the group of figures of the idolaters and the sacrificial bull moving away *en masse* to the right of the kind of temple which forms the "scene," as Christianity flies in from the other side. The "New Law" rides in triumph on a chariot, attended by Cupids (evidently a "property" made to serve all purposes of decorative painting), and among thoroughly sumptuous and Pagan surroundings; and in "The Triumph of the Church through the Eucharist," where the Church, personified in a female holding the eucharistic cup, rides along on a car, Juggernaut-fashion, over prostrate victims, and is preceded by a youth on horseback with the two keys tied crosswise to the handle of his canopy, the contrast between Christian subject and Pagan treatment is complete. The painter seems to say, "There! Could you have better allegory served out to you? Could you have a more sumptuous effect for the price and the space covered?" In this kind of determination to make a grandiose effect, whether the nature of the subject demands it or not, Rubens reminds one of Paolo Veronese, with whom he has some affinity, though he may be said to have far more power than Veronese, if less refinement. In treating some other sacred subjects, and where he was out of the temptations of allegory, Rubens is, however, not without pathos, or at all events a powerful realisation of his subject which produces the effect of pathos. His "Crucifixion," where the one figure hangs in the centre of the picture alone, against the dark sky and landscape, has a tragic solemnity about it which reaches quite beyond the region of theatrical effect, to which he was too often confined; and in the other well-known "Crucifixion," where the figures of the two thieves also are introduced,

* *I.e.*, "not at a loss."

* It is a characteristic instance, however, of his practical and business-like way of looking at his art, that in one of the letters printed in Mr. Sainsbury's book mentioned above, he gives as a reason for asking a high price for some decorative painting, that owing to their position the figures would have to be much foreshortened. This was evidently regarded as work requiring a special degree of ability, which ought to be considered in the bill.

the painter may perhaps be called cruel in his depiction of their agonised attitudes, but the effect is real, and proceeds from an intensity of conception of the circumstances which might hardly have been supposed possible from the painter who could be so palpably theatrical at other times in the treatment of grave themes His "Descent from the Cross," which will probably always rank as his greatest work, is also a really grand picture in feeling as well as composition; and though it is impossible to claim for Rubens the intensity of artistic conception and feeling which belonged to Rembrandt, we are inclined to say that a comparison of this work with Rembrandt's treatment of the same subject must result in a feeling that the Antwerp painter has produced the greater and more balanced work; less individual in character, perhaps; more recalling the manner of the Italian school; but, as a whole, a work in a larger and more dignified style than that of Rembrandt.

In a note on the subject of the attitude of the Church in doing honour to Rubens at the recent *fête* (see page 868, *ante*) it was mentioned that he had adorned the former Jesuits' Church at Antwerp with paintings, since destroyed in the fire that consumed the building. It is not generally known, perhaps, that a fine set of engravings of these designs is in existence, from drawings made by De Wit before the burning of the church. These designs add a large item to what we know of the extensive and multifarious productions of the hardworking painter. The engravings show about thirty designs of scenes from Biblical and ecclesiastical history, in panels of three shapes—square, elliptical, and octagonal; they were evidently ceiling paintings, but it is difficult to understand under what arrangement these panels could have been combined. There can be no doubt, however, that the church as decorated with these vigorous and boldly-drawn groups, must have afforded a remarkable specimen of decorative painting on a grand scale. The pictures are designed on that extraordinary, and, in most respects, unfortunate principle which was so common in ceiling paintings in the great period of Italian art, by which the attempt is made to represent the groups, not as if painted on the plane of the ceiling as a ground, but as if standing up at right angles to it, and looked up at by the spectator from below. The consequence is that the number of soles of feet exhibited in these drawings is astonishing, and, viewed on the page they appear all to be falling away from the eye, from the foreshortened perspective adopted to give them the appearance intended *in situ*. In spite of this radical drawback, there is much to admire in many of these compositions, which strikingly illustrate both the strength and weakness of the master: his force and vigour in the representation of action, his utter want of sentiment or of ideal dignity, and what may be termed holiness of feeling, where these qualities are required by the subject. His saints, Catharine, Barbara, and others, are known by the symbols of their martyrdom, but are mostly plump and solid-looking dames, with no appearance either of temporal suffering or of spiritual aspiration. St. Cecilia plays an organ with great appearance of enjoyment, and is crowned by a garland from behind by a youthful cherub, while another little fat Cupid-looking fellow struggles away at the bellows with the air of one who has more than he can do. "Athanasius debellans Arium" is represented seated with the prostrate heretic under his feet, and apparently prodding him in the ribs with a crozier. What Rubens could do and what he could not do is well contrasted in the two designs representing respectively Joseph seated in Pharaoh's chariot and honoured by the people, and Elias carried up to heaven in the fiery chariot. In the latter Elias is seated in a gilded (apparently) chariot, adorned at the back by a huge shell ornament, and recalling the description of the chariot in which "Romeo Coates" delighted to driveabout; he is galloped away from the spectator by a heavy-made horse, drawn and foreshortened "with great *brio*," as critics of the Georgian era would have said. A more grossly prosaic rendering of the subject could hardly be desired. In the Joseph we have the same sort of motive without the supernatural, and with less demand on the imagination, and the result is a design of great force and power; the chariot drawn by four horses abreast appears to ascend over the brow of a hill facing the spectator, the nearest horse rearing and pawing the air, while on either side are figures, the upper portion only seen, blowing trumpets. This whole group has a remarkable look of triumph and pomp, and the horses are exceedingly fine. Among the designs which have more serious qualities than those we have mentioned are "Esther before Ahasuerus," where the figure of Esther, half kneeling and bending forward, supported by her maidens at each side, has a grace and delicacy beyond what is usual with the female figures of Rubens; and "The Question of Judas" at the "Last Supper"; this latter is a fine composition, representing a part only of the group of disciples, assembled in a small apartment, lighted from a circular window above the group, Judas in the foreground, with his back to the spectator and his profile seen as he leans forward with his chin outstretched with a very sinister expression: the original study for this, a rough drawing with the shadows heavily washed in with Indian ink or some other dark tint, is in the print-room of the British Museum, which possesses a small collection of original sketches by Rubens. The design of "Abraham and Melchisedec" is a fine one, and so is that of "The Queen of Sheba visiting Solomon"; and there is very vigorous and spirited action in the "Michael and Satan." The engravings are well worth attention by those interested in the work of Rubens.

Some interesting light is thrown on the painter's method of working, and his view of his art, by his small treatise on the "Theory of the Human Figure," from which it is obvious that his bold and rather exaggerated style of drawing is not to be taken as the work of a man careless of correctness of details. On the contrary, he seems in his treatise to be almost too much inclined to lay stress on method and calculation in the design of the figure, so far as the recommendations laid down in the text are concerned, though the sketched illustrations are free enough in style. He goes on the rather old-fashioned principle of reducing the figure more or less to certain mathematical diagrams, which form the basis of most of its attitudes; commencing his treatise with the remark, "On peut reduire les élémens ou principes de la figure humaine au cube, au cercle, et au triangle"; and apparently he applies this not only to the general attitudes of the whole figure, but to the contours of its parts; for he observes that the circle is predominant in the contours of the female figure,—a principle which he certainly seems to illustrate in a good many of his own paintings of the nude figure, and occasionally in the male figure also. Haydon, we remember, somewhere in his lectures on painting, lays it down as a rule that the bounding contours of the average type of the human figure are always segments of ellipses or of the higher compound curves, and are always found to be so in the works of the greatest painters; and he gives a caricatured outline of a leg in which all the lines are segments of circles, to show how grotesque the effect is. But there is a sketch by Rubens among the British Museum drawings, of Samson rending the lion, in which the right leg of Samson might have been taken from Haydon's caricature. It is curious to contrast his remarks in some parts of the treatise with his actual practice. He says, under the heading "*Perfection des diverses Parties du Corps de la Femme*,"—"*Le corps ne doit être ni trop mince ni trop maigre, ni trop gros ni trop gras, mais d'un embonpoint modéré, suivant les moddles des statues antiques*"; so we must suppose that he really believed himself to be a follower of the antique model: and he adds further on, "*à la beauté des formes et des contours délicats de la femme, il faut ajouter beaucoup de modestie et une grande simplicité et égalité dans sa contenance.*" It is certainly amusing to read this and to look at his "Judgment of Paris" and other pictures in which the female figure is prominently introduced; but it must be admitted that in the slight sketches illustrating this part of the treatise, he does show more delicacy of proportion and contour than in many of his finished paintings. There are not wanting examples either, in his larger works, of a greater amount of grace, of form in painting women than he is generally credited with: for instance, in the extraordinary composition in the Luxembourg series, where the education of the princess is superintended by Mercury, Apollo, and the Graces, in character (except that Apollo is playing the violoncello), the Graces are fine girls, not too stout; and in the last picture of the series, "Time unveiling Truth," though Truth is certainly what the Yankee lady would have called a very "fleshy" young woman, and Time seems to have no light task in hoisting her up to the sky, she has a very fine contour of face and figure, and, with her bright luxuriant hair floating on her shoulders, is a cheerful object to contemplate, as "Truth" should be.

Reference has been made to the sketches by Rubens in the British Museum; these are not many, nor for the most part remarkable; the best is a very powerful and characteristic pencil drawing of a Silenus, whose thick knotted hairy limbs and wrinkled grotesque face are evidently drawn *con amore*. Another fine drawing is that of an old satyr and two young ones seated under a tree, with a tiger dozing in the foreground; this, like most of the drawings, is in rough pencil or crayon on rough brown paper, with slight touches of colour and of white for the lights. A small copy in colour of the figure of the man letting himself down from the wall of the burning house, in Raffaelle's well-known design, is of interest as indicating his study of that master. There is a sheet containing some interesting small studies of heads of various types, and two or three finished drawings forming studies for executed pictures.

Mr. Sainsbury's book, before mentioned, contains some curious evidence, as we pointed out when reviewing it, of the extent to which Rubens depicted works or portions of works which he had not time or inclination to finish himself. In regard to the landscape containing the view of the Escurial, which was at the last but one of the loan exhibitions at Burlington House, the original of his second letter about it was printed in the catalogue at the time; but the first letter, in which he avows it was not his own, is curious for its frankness. He says, writing to Sir B. Gerbier, "It is true that Mr. Norgate, being at my house, saw this piece of St. Laurens in Escurial without expressing any astonishment at the circumstance, otherwise than very slightly, and it did not appear to me necessary to undeceive him, as I might have displeased him. But seeing myself pressed to speak the truth, and not to deceive the majesty of Britain, to whom I am under so many obligations, I confess that the said picture is not by my hand, but entirely painted by one of the most common painters (called Verhulst) of this city, after my design made upon the spot." In the next letter (the one printed in the Academy's catalogue) he goes on to describe the picture in a contemptuous kind of showman's vein,—"Here you see the famous building of the Escurial," "Here the village and the two ponds near it," and so on; and, with another back-handed hit at poor Verhulst, he adds,—"the picture is finished according to the capacity of the master (under my direction, however). Please God, the extravagance of the subject may give some recreation to his Majesty." From another letter of Sir B. Gerbier's to Charles I., it appears that Rubens was not content with sub-letting his work to one assistant only: "I have now desired the Abbate d'Escaglia to knowe (without spending more time about a trifle) whether Sir Pieter Rubens will fill the 6 pieces of the sealing with festoons or little children representing loves, as he proposes the same to be put into a third hand, which I cannot like, as to many cookes spoile the broth": a conclusion in which there was certainly some reason. Gerbier seems to have found it hard work to adjust matters between Rubens and his royal patron; he says testily at the end of one letter,—"In my Letany I could say, 'of painters deliver me.'"

These are not the characteristics of an artist with a very high view of his calling, certainly; and yet the records of the private life and character of Rubens cannot but impress us with admiration and respect, and furnish, moreover, an instance of the unreliable nature of estimates of an artist from the character of his productions. For certainly, if we were to attempt to draw conclusions, without any previous knowledge, concerning the man who was often so coarse in his style, and so given to painting satyrs and silens, and bacchanalian orgies of "drunken-headed imaginary gods," it would not be unreasonable to conclude that the painter of these was a man of sensual tastes and self-indulgent character. But all testimony shows us a Rubens the very reverse of this: a man fond certainly of sumptuous surroundings, but entirely worthy, honest, and healthy in his pleasures; diligent in his art; "the declared enemy of all excess;" rising at four to commence his painting, and listening to reading at the same time; working again after breakfast with an hour before dinner for recreation, which consisted generally of talk upon science or politics; work again after dinner, and then

recreation in the shape of a ride on "a spirited Andalusian horse"; he being very fond of horses, and keeping always several fine animals. There is something invigorating and refreshing in the contemplation of this energetic and busy life, sumptuous and ornate without luxury or indolence (a combination not very often seen), the spectacle of which constitutes, we may say, a finer picture than any which the genial and robust artist put upon canvas.

THE MASONS' DIFFICULTY.

THE recurrence of strikes, each differing in special details from those which have gone before, but all marked by a very strong and very ugly family likeness, is a subject so distasteful to those who have the interest of the workman at heart, that it is only the hope of being able, from time to time, to contribute some element of stability to the disturbed relations between employment and labour that induces us to refer to the subject. There are, however, certain statements made in connexion with the present strike of the London masons which require discussion on their own merits, and with regard to which it is desirable that no doubt should be allowed to linger. And in referring to these details, a general truth becomes obvious, which not only has a very important bearing on the subject of the present contention, but which further contains within itself a clue,—or rather indicates how such a clue may be obtained,—which must, sooner or later, tend to the settlement of this long, angry, and ruinous class of debates.

We refer to the collection and arrangement of the statistics of work. Recent strikes have a peculiarity of their own which is, to a certain extent, hopeful. Both sides to the contention disclaim, to the last moment, the wish to resort to the strong hand. Both sides are anxious to set themselves straight with the public; to show that all the inconvenience, all the suffering, is borne by themselves, and that it is only in self-defence, and in the last resort, that they are compelled to put a stop to existing contracts or conventions. Now, a claim of this kind may be truthful; it may spring from self-delusion; or it may be a transparent piece of special pleading and falsehood. Again, it may possess a mixture of these qualifications. But, whichever it be, it has, at least, this merit. It intimates the acceptance of the doctrine that there are certain conditions and elements which must ultimately fix prices; that prices do not altogether depend upon either the buyer, the seller, or even the accord of buyer and seller; but that, to some extent, they depend on conditions beyond the control of either buyer or seller. It follows, not only that a knowledge of such conditions is indispensable to any one who would either buy or sell wisely, but that the ultimate course of the market will be controlled by these conditions. In that case it is clear that those who first make themselves fully acquainted with those elements of cost which neither master nor man can absolutely control, will be most sure in their pursuit of the future condition of their trade or occupation; and, therefore, will be best prepared for making such demands as will hereafter prove to have been, not only just, but intelligent.

Thus we find, on the face of those communications which, on both sides, have appeared in the daily journals, that masters and men are at odds on a question of fact. A jury is required, even before a judge can be called in. The London builders say that their business, like most other branches of business in the United Kingdom, in the United States, and in some other parts of the world, is passing through a period of depression. Work is slack: people defer any outlay that they can defer; and building is generally an outlay of this nature. Prices and profits are everywhere falling; and to ask, in the face of this state of things, for a shortening of time and a rise of wages is to fly in the face of common sense.

To this the reply that is offered also claims to be based on fact. Whatever be the general state of trade, say the masons, we find that more rather than fewer of us are wanted in London. None of us are out of work. Jobs are always wanting hands. We are sufficiently in request to make our own terms, and we fix them accordingly.

We cannot pretend, of our own knowledge, to assign the true value to this argument; that is to say, to decide how far it is founded on actual fact. It would seem to be an anomaly requiring explanation, if the condition of one trade were exceptionally good, while that of most trades was declining. But it is the fact, as we learn from the Commissioner of the Metropolitan Police, that far more than the average number of houses have been built in London during 1876, and are still in course of erection. From 1849 to 1874 the number of new houses built in London averaged 10,800 per year. In 1876, 12,938 were built, and 4,151 were in course of construction. In 1873, only 7,687 new houses were built. It would add much to the value of the Report of the Commissioners of Police if it stated how many houses were vacant at a given time. In some of the outer districts of London we can say of our own knowledge that the number of sales has been sadly unsatisfactory. At the same time the masons ought to know something about their own business. It has been suggested that the regulations of the unions have had much to do with the alleged under-supply of masons in London. If this be the case, it proves that a disturbing influence is being exerted on this description of labour, which, even if it appear to benefit the mason for a time, must hereafter be disastrous in its effects. We shall not be accused of paying any superstitious homage to the rules laid down by the political economist, and it would be easy to show that what people speak of with bated breath as the "great law of supply and demand," is either, on the one hand, so vague and general as to afford no more practical aid to action, in any special cases, than the most obvious truism; or, on the other hand, subject to such infinite varieties of modification, in application to any particular case, as to be anything but a simple rule. But it is, we hold, beyond all doubt that the demand, whether for work in general, for that of the builder, or for any branch of that work, as that of the mason, in particular, cannot be permanently increased by a refusal, or slackness, on the part of the workman to furnish that particular kind of work. There may be for a time an apparent action of this kind. Existing contracts, for example (in spite of the now general insertion of a strike clause) may have to be carried out. It may be better worth while to pay a little more, however unjust, to one set of men, than to throw a dozen sets of men out of work. But such a calculation is one of the most risky character, even for the moment, while in the long-run it must certainly defeat itself. Bricklayers, and carpenters, and plasterers, and tilers, and plumbers, and smiths, and fitters, and so on through a goodly fraternity of trades, are not likely to see masons claiming privileges and improvements in position which they are denied. Nor will they be more likely to "stand" it for being told that the masons can claim such advantages because they are under-handed, or few in proportion to the work to be done. If such be the case (which has to be shown) the members of such a trade should be, their brother craftsmen may naturally insist, the last to disturb existing relations, and to make claims which either must establish an invidious preference in favour of one class of workmen, or must result in adding some 10 per cent. to the cost price of building in London.

Every step which we take in the investigation shows the primary need of exact statistical knowledge. It ought not to require more than an hour or two to put on paper replies to the questions, how many houses, involving mason's work of any considerable amount, are now building in London? How many masons are engaged by the London builders? Ought not,—we say,—but unfortunately it does. Where can we turn for such information? It is evident that the exclusive possession of knowledge on the subject must give a great advantage to the party possessing it. It is no less obvious that the common interest would be served by the existence of such common knowledge. It is quite conceivable that, in the present case, each party is in possession of a degree of knowledge, as to his own side of the case, which is superior to that possessed by the other. But the advantages thus obtained neutralise one another. At all events, the information is not so obtainable as to be of general, that is to say of public, utility. The masters may, and probably do, know the most as to the difficulty of obtaining contracts for new work, as to the prices which they can ask, as to the general outlook of the building trade. The masons may, and probably do, know the most as to the number of their own body now in London, and as to the amount of support which they may hope to receive if they now decline to support themselves. But it is just this possession of one side of the case which is at the bottom of all wars. Each party counts his own resources, and is but too apt to consider that they must greatly outweigh those of his opponent. Had the Russians known the resisting power of the Turks, it is not probable that either the Pruth or the Caucasus would have been crossed by a single Russian soldier this year.

If knowledge, not only of one's own resources, but of those of the opposite party, were ordinarily and thoroughly obtained, how many a contest would have been avoided. In many cases a perfect knowledge of the conditions of the case would convince any impartial inquirer that but one result was possible, or, at all events, probable. In such a case it would not, certainly, be the weaker party that would commence hostilities. In other cases both parties might be taught to respect a very considerable display of strength on the respectively opposite sides. In such conditions each party would be alike reluctant to fall out. Whether, then, we look at the matter from a general standpoint, or whether we inquire into the special question now at issue, we come to one result. A full, clear, public knowledge of the statistical condition of any trade, accessible to all members of that trade, and accessible to the public, would afford a better preservative against trade quarrels, strikes, and bad blood, than any other single expedient which we can now point out.

Much the same line of argument applies to the question of the hours of commencing work in the morning. The servants of the Metropolitan and Metropolitan District Railway Companies, besides holding the undisputed primacy as to the safety of working an unexampled traffic, are taxed, there can be little doubt, with a long day's work as a rule. The first train departs from the Aldgate Station every week-day morning at 5·45 a.m. From Bishops-road Station there is a departure at the same hour. The last trains stop at Mansion House Station at 11·25 p.m.; at Bishops-road, at midnight; at Brompton, at 12·4 p.m.; at Aldgate, at 10·54 p.m. Eighteen hours of such duty as that of these lines is no trifle. We are not aware how far the relay system is or is not carried into effect. But it is plainly evident that, without a good system of relays, the limit of human endurance must be fixed somewhere. And it is quite conceivable that the attempt to set this complicated system in operation half an hour earlier than at present, or say at 5·15 a.m. instead of 5·45 a.m., would involve an increase of expense entirely incommensurate with any returns to be derived from an earlier train. As to this, the able and successful managers of these great lines have no doubt something to tell us, and they are entitled to be heard. But how is it that this question is now surging up for the first time? How is it that it affects masons more than any other class of workmen? The public, as well as the masters and the men, are entitled to receive full information on these points. We want to know, first, what is the earliest hour at which the Metropolitan Companies are prepared to start the workmen's trains, on being assured of a certain amount of custom? Can they, or can they not, at present prices, start earlier than a quarter to six in the morning? And, if not, what are the prices or the inducements necessary to be offered in order to make it worth their while to do so?

This point cleared up, we come to the other side of the question. Is there any real and serious difficulty as to the hour for commencing work in London? Is any class of workmen specially affected by such difficulty, if it exists? If so, which and how? Full information on these points is necessary before we can even discuss the second question. Is there any objection to allowing one group of workmen to commence their work at a later hour than other groups? That there are serious objections to such a measure no person experienced in the direction and in the outcome of labour can for a moment doubt. But the true question is,—Are such objections insuperable? or how are they to be best met?

We think that it must be tolerably clear to all unprejudiced observers, that if public writers who, with as deep interest as is compatible with perfect impartiality have long watched over every phase of the condition of the London workman, are in want of definite information on elementary questions of this nature, the persons who are now plunging into the strife are not likely to be better informed. By that, of course, we mean better informed all round. Because, as

we before explained, better information only as to one side of the case, or one set of facts, may be rather misleading than otherwise, if coupled with absolute unacquaintance with the other side of the question. It can hardly be doubted that any engineer or architect of competent experience, if furnished with such exact details as we have pointed out to be necessary, would be able to say, with the utmost certitude (apart from any question of propriety, or of moral right and wrong), such a demand can or cannot be now sustained for three months. How much bad blood, loss of time, and loss of money, would be saved by inquiry of this nature, — a purely scientific inquiry! What the interests of all parties demand, then, is that information of this kind should be freely accessible to the public writer.

A lurid light is cast on this question of strikes by the news which arrives from America as we write. It is to the social institutions of America that we are always told to look by those who fancy that the position of the workman is to be improved, not by improving his education, intelligence, and moral virtues, but by giving him the numeric majority of the infinitesimal units which go to constitute polical power. But it is in America that we see the old dream of the organisation of labour, and the application of the motto, *L'état, c'est moi*, to the workman, even now brought forward as a practical object. The "working men's party of the United States" is founded on the avowed intention to destroy the "unendurable tyranny of capital." The goose which has laid so many golden eggs is to be killed, not in order to get at the hoarded wealth in the most expeditious way, but on the ground that she has impoverished her owners the more by every egg that she has laid. Fifty-seven thousand members of this society, we are told, are organised in an English, a German, and a Bohemian section, while a French section is in the course of formation. A congress is to rule and govern the body, which is thus to be a sort of *imperium in imperio*, or parody of a Republican Government, bent to overturn the larger and older Republican Government which has sheltered and fostered its members. Under this congress the sacred rights of labour are to be established; an eight hours' working-day is to be universal. Means of subsistence are to be assured to the workman by the State. Education is to be gratuitous, and, of course, its advances beyond a very elementary stage will be *ipso facto* prohibited. No child is to work under fourteen years of age. Employers are to be liable for all accidents to those in their employ, by way of inducing them to invest capital in industrial enterprises. Justice is to be gratuitous, so that the institution of the bar will be destroyed. All industrial enterprises are to be placed under Government control, and worked by co-operative trade-unions for the good of the whole people.

It is not now for the first time that we hear of such a golden Utopia. It is melancholy, after the experience that we have had of the results of so many attempts at the artificial organisation of labour, to be told of the working men of America coming together by thousands to listen to men who promise them that "the three-hooped pot shall have ten hoops," and that all shall eat and drink at the common expense. And when this is coupled with the accounts of the actual condition of society, especially of the working classes in America, the frightful responsibility of the persons who stir up a war of classes appears in its most unfavourable light. "One-fourth at least of the working population here," says the *Philadelphia Times*, "are unemployed, and thousands of idle men are constantly tramping the country, plundering or begging for bread." Trade failures are so constant that they cease to attract notice; while, in regular succession, banking institutions crash and insurance bubbles burst. Property has everywhere deteriorated 25 per cent. More than 20,000 houses are standing vacant in Philadelphia. Works and factories are extended so far beyond the requirements of trade that one-half of them are idle, and the surplus hands are unable to find employment at any price. The miners are frequently on the brink of starvation. Half their time is spent on strike for one grievance or another, and at present they are in open insurrection in the coal districts of Pennsylvania, where from 5,000 to 6,000 troops are under arms to prevent rioting and the destruction of property. In the iron districts one-half of the blast-furnaces are blown out; numbers of rolling-mills are shut down; and scarcely one-fourth of the capital employed in the trade is productive.

It is under these circumstances that the most disastrous labour revolt on record in any country suddenly sprang to proportions which threatened the very structure of society. A strike originating in the resistance of the firemen and brakesmen on the Ohio and Baltimore Railway to a proposed reduction of wages led to the death, in open riot, of more than 100 persons, with many more wounded, in about ten days, and to the destruction of property to the amount of more than twenty-six millions of dollars. So unexpected was the outbreak, and so large the area that it embraced, that the State authorities were unable to cope with the difficulties of the situation. In a week the military occupation of America, as far as the communications were concerned, was in the hands of the mob. For one workman who struck,—there were perhaps fifty men whose quarrel was ever open, both with work on the one hand, and with property on the other. Whether the firemen were justly or unjustly used by the railway companies might be a matter for question. But there can be no question as to the character of the outbreak which destroyed Pittsburg Station,—one of the finest in the United States,—with ninety locomotives, and with 400 vehicles, by the use of the same revolutionary ammunition which the Commune directed against the historic monuments of Paris,—petroleum. The whole framework of society was in danger. The sturdy vigour of the Anglo-Saxon blood alone averted such a revolution as the world has not yet seen. The men who had a stake in the country,—the householders,—were obliged to come down into the streets, and to look the revolution in the face. Then, and then only, it collapsed, or rather it dived into its lurking-place, ready for another spring at the throat of the State on the first occasion. All honour to the men who, in the hour of peril, saved society. But on what sort of a volcano is a society resting that needs such a measure of self-protection?

It cannot be doubted that in the face of this last example of what may come of a strike, even if there might have seemed to be some cause of justification, every fresh movement of the kind will be viewed with increasing alarm by the great mass of the public. But what we have more especially at heart is, to convince working men how much they injure themselves by these measures. Can any one calculate the loss sustained by the working classes from strikes during the last twenty-five years? We speak not only of the loss through non-occupation and non-earning, from the enforced idleness adopted in order to make work, but of the shock to confidence, the arrest of enterprise—the production of a state of things which, however much better it may be than that of which the news comes from America, is yet anything but what we could wish.

On the other hand, it is nothing more than impartial further to say that the last Report of the Commissioners of Police for the metropolis (before referred to) which has been issued since the greater portion of our remarks was written, does not bear out the statement of the masters as to the depression of the building trade. That is to say, it does not on the face of it. There may be explanations to give, which would remove the apparent contradiction. But if so, they should be given at once. Six hundred more houses are now (according to these tables) in construction than was the case at the same time two years ago, the numbers being 3,542 in 1874, and 4,151 in 1876. It is possible, of course, that these are of a lower average, and thus represent less work; but the subject is not one to be left to guesswork. It is possible that the preparation of tenements for the working classes on a large scale may be intimated by the figures; but there is nothing to show that such is the case. If anything could—we cannot say justify, but—excuse, any one set of men in acting for the supposed selfish interest of a single trade, heedless of the result of their claims either on the course of trade itself or on the welfare of their brother workmen, it would be the discovery of misrepresentation as to the actual state of the general business in question. We should regret deeply if it should prove that any such misrepresentation has occurred. At the same time we must call on the master-builders to explain the apparent discrepancy between the statement of the bad condition of their business, and the return of the number of houses built in 1876, and in course of building at the close of that year in the metropolis.

A GENERAL VIEW OF THE BRITISH ASSOCIATION CONGRESS.

The meeting of the British Association at Plymouth, which came to a close last week, has not been deficient in variety and novelty of subject matter, including also one or two topics of special interest. Our space, we need hardly observe, did not admit of our giving detailed reports even of those discussions which bear most directly upon the subjects in which we are interested, but we may touch briefly on some of the features of the Plymouth meeting, and suggestions arising out of it.

The Presidential address this year, valuable as it as a *resumé* of the present position of a most important branch of physiological and philosophical study, by one whose researches have specially lain in that field of inquiry, probably disappointed a large part of the audience, considered as an address, and does not present that ground for varied comment and suggestions which is usually presented by what may, on the whole, be called the typical form of president's address on such occasions, which takes a general survey of the state of science, instead of going in detail into abstruse points of investigation.* Leaving on one side, then, the questions involved in the consideration of embryology and evolution (the latter of which, however, touches every point and pursuit in life more or less), we will run our eye over the Departmental work.

In Section A, "Mathematical and Physical Science," the President (Professor Foster) made in his opening address an allusion, from which hints may be taken in other departments of knowledge, to the advantage which would result from the periodical publication of a summary of all that had been accomplished, every new step that had been taken, in connexion with these branches of knowledge, within a certain specified time. He suggested intervals of six years, at the expiration of which period such a summary should appear, not the work of any one man, but the combined result of the experience and knowledge of representatives in each branch of study included under these heads. We certainly require, especially now that science is becoming more and more multifarious, some such systematic reporting of progress in regard to every important branch of human study and effort. One of the first steps towards knowing what remains to be done, and what is most urgent, is to know precisely what has been recently done, and in what way.

The second day's work of the same section certainly offered variety of subject, progressing from Sir W. Thomson's theory of the conveyance of life to this planet, to Mr. Preece's account of the telephone, and the subsequent experiments with it by Sir W. Thomson and Professor Haughton. As to the first subject, which was an enlarging by Sir W. Thomson on an idea started by him in his address as president at the last Edinburgh meeting of the Association, it appears to us eminently and surprisingly unpractical and unscientific. The telephone is a much more tangible matter. There seems room, so far as the evidence goes, for much difference of opinion as to whether this invention will really revolutionise telegraphy, or whether it cannot get much beyond being an amusing experiment, of practical use for short distances only. There seems to be no proof as yet that it can accomplish more than this, and it evidently does not combine well with the existing system by signal, and requires the wires to be more than merely electrically isolated. At the same time we are not disposed to think that so remarkable an experiment will be allowed by modern science to rest where it is, and our expectation is that practical difficulties will be got over, and the telephone brought into extensive use before many years. Other papers read in Section A were on "Underground Temperature," by Professor Everett, and on the "Effect of Transverse Stress on the Magnetic Susceptibility of Iron," by Sir W. Thomson, a highly interesting subject to those who have to do with the theory of iron construction. These were followed the next day by the Rev. Professor Haughton's paper on the "Tidal Observations of the recent

* This used to be the typical form, but lately it would seem that there has been a tendency to depart from it in favour of such specialist addresses as that which Professor Allen Thomson has delivered. Although by no means approving of mere general talk or declamation, we cannot help thinking a more generalising tone in the opening address at a scientific congress is desirable, if only to bind together and give some unity to the variety of apparently unconnected subjects which are treated of, and counteract the narrowing tendency of special studies.

Arctic Expedition," and by Commander Cheyne, R.N., on the "Discovery of the North Pole," suggesting the use of balloons to get over the impassible barriers of ice. This, however, must surely be contingent on the discovery of more or less steady currents towards the point in question; and it is to be feared the effects of extreme cold would be even worse felt in this method of progress than in any that has been attempted. We are convinced that mankind will not rest (English mankind in particular) till they have stood at the North Pole; but we fear a good many lives are likely to be lost in the attempt, and the advantages to be gained are rather imaginary (or sentimental) than real. Still, we sympathise with those who refuse to be beaten.

The geological section included various papers, but including little, apparently, that could be of directly practical application in these columns. Biology seems to have proved not a generally attractive section, and we noticed a statement in the *Times* report that a gentleman read an "exhausting" account of the various species of roses to be found in the Plymouth neighbourhood; but whether the final syllable of the word as printed involved a crushing sarcasm, or whether it was merely a misprint for "exhaustive," we do not of course pretend to form an opinion. Proceedings in the biological section seemed to take a more lively turn when the Colorado beetle came on the stage. *Punch* represented that enterprising insect as studying a prospectus of "Cook's tour round the world"; but the men of science are against him, and think he will not manage it; still we counsel that he should be none the less vigilantly watched.

The section of "Economic Science and Statistics" was presided over by Lord Fortescue, who may be termed a martyr in the cause of sanitary reform, since, as he mentioned in his opening address, and as we well remember (he was then Lord Ebrington) he nearly lost his sight and became permanently an invalid some twenty years since, from disease caught while prosecuting personal researches in preparation for his Bill on the subject of the Health of the Army. His address dealt ably and hopefully with the important subject of the relation between population and labour, combating the view which has been somewhat thoughtlessly advanced or implied by some eminent men, that disease and war were to be regarded in the light of necessary checks on population. In regards to this point we may quote the following portion of Lord Fortescue's address:—

"Mr. Chadwick showed by the Sanitary Report of 1842 that excessive sickness with premature disability and mortality in a population did not, except, of course, in very extreme cases, tend in general to diminish the aggregate number, but only the average efficiency of the living and the average productiveness of their labour, and, comparing the healthiest with the average districts, that the cost of excessive sickness and premature disability and death, including the consequent loss of productive labour, involved throughout the kingdom an annual loss of over 14,000,000*l.* even according to that defective standard—a loss, I may observe, which has gone on uninterruptedly to the present day. Indeed, London actually has had its rate of mortality augmented under the costly management of the Metropolitan Board of Works. Mr. Chadwick, followed and aided by an ever-increasing proportion of economists, has thus more than modified—he has to a great extent reversed—the practical conclusions to be drawn from the report of excessive sickness and mortality, and has demonstrated the concurrence of the demands of economical prudence with those of Christian duty on this important subject. But, further, he contended that in an energetic and skilful population, freely allowed to obtain what they could get more advantageously from other countries for what they could produce more cheaply at home, the tendency of the demand for labour would be absolutely to outstrip the ordinary growth of population, and predicted, years before it occurred, that very scarcity of labourers in England compared with the demand for them which made itself so much felt a few years ago in every branch of industry. Notwithstanding the large emigration from the British isles to the United States as well as to our own colonies, the number of inhabitants in them has nearly tripled, from about 10,000,000 in 1760 to more than 29,000,000 in 1861, though in France it has only increased from nearly 22,000,000 to rather more than 37,000,000 during the same interval. Indeed, our population has now increased to more than 32,000,000, which is only about 4,000,000 less than that of France since she has lost Alsace and Lorraine. To show the complete reversal among political economists in general of the once almost universally received doctrine as to subsistence and population, I must quote another passage from Dr. Farr:—'There is a limit to the increase of both people and produce; but the tendency now is, as men endowed with skill, weapons, tools, and marvellous machines are diffused over the world, to create subsistence faster than population.'"

His lordship's remarks upon the possibility of simplifying the division of the country for rating and municipal government also included highly important considerations, to which we may return on another occasion. Mr. Stephen Bourne followed with a paper apparently carrying out more in detail the views which had been suggested in Lord Fortescue's address, and urging that there was a surplus productive power in England, which depended on the growth of the population, and that there was therefore no reason to restrain that growth. We have frequently urged that the desideratum in regard to this problem is to see that the hands that want work and the work that wants hands are brought together; and we recommend attention, when the proceedings of this session of the Association are published, to the practical and encouraging view of the subject which has been propounded at Plymouth. The subject of population was continued by Dr. Farr at another day of the section, and he showed a tendency to the same conclusions, drawing attention to the economic results of the crippling of population in France by artificial checks (a subject which has been made disagreeably prominent in this country recently), though he dropped at the close of his remarks into an unscientific spirit of sentimentalism which brought upon him some not uncalled for criticism from Mr. Collier and others. Sir James Watson illustrated the great question of the sanitary improvement of large towns by the case of Glasgow, describing, with the aid of diagrams, the original condition of the worst parts of the town (in some of which the death-rate was 70 in the thousand), and the system of improvement adopted, by clearing away bad districts of tenements and providing open spaces for air, and building model lodging-houses for the ejected inhabitants. A *resumé* of this paper appeared in the *Builder* of August 25th: we may take this opportunity of drawing attention to the evidence it affords as to the possibility, in Glasgow at all events, of making model lodging-houses for the very poorest class of the people remunerative; a point which, we need hardly remind our readers, has been much questioned, and regarded as one of the greatest stumbling-blocks in the way of sanitary reform. What was felt, however, by all parties to be one of the most important and interesting contributions to the proceedings of the Economic and Statistic section was the paper which was the joint production of Mr. Bramwell and Mr. Easton (read by the former) on the water supply of London; a subject chosen not merely from its own immediate interest as an important question relating to the welfare of the capital city, but as affording a typical exemplification, on a great scale, of the difficulties attendant on the supply of water to large towns generally. This subject has this last week cropped up again, as most of our readers have probably noticed, in reference to the difficulties of Manchester. Concerning the main aspect of the principle of a double supply to London from two different sources and under two different managements we have already expressed our opinion: it may be noted here, however, that the method of serving the double supply is one thing, the abstract question of the advisability of having two sorts of water,—a best for drinking and culinary purposes, and a second best for washing and sanitary machinery,—is another thing; and opinions in the discussion seem to have been favourable in general to this principle, as affording one means of meeting the increasing difficulty of providing a supply of the purest water, in the great quantities needed, if one quality of water only is used. Earl Fortescue, in the course of the discussion, observed that in Devon the propriety of reserving a high quality of water for drinking purposes was well understood, and that the farmers and cottagers kept the two qualities distinct.

In the section of Anthropology, Mr. Bertram Hartshorne read a paper on "The Ancient People and Irrigation Works of Ceylon," from which it appears that the well-being of the Cingalese has been to a remarkable extent, morally and physically, dependent on the keeping of large tanks for the supply of irrigation works, without which cultivation and consequent means of living are next to impossible there. After detailing the manner in which the tanks had been allowed to fall to decay, the lecturer turned to the more satisfactory account of the improvement in the condition of the island through the energy of the present English governor, Mr. Gregory, whose restoration of many of the tanks had already led to the happiest results, a marked example of the connexion between material a ndmoral sanitary condition:

"The neglect and apathy of successive generations of the rulers and the people had been the main cause of the abandonment and desolation of large tracts of land, which in former times were exceedingly fertile. Foreign and internal warfare, too, caused the destruction of some of the irrigation works, and their continued disrepair had been mainly owing to disregard of ancient customs, and to the abolition of a system of compulsory labour. The population, too, had been seriously diminished by a decrease resulting from bad food and the habitual violation of every principle of sanitary economy. This malady seemed to be amenable to no direct treatment, but probably good food and pure water would ultimately tend to check it more than anything else. This happy result would be chiefly due to the comprehensive scheme which had been lately initiated, whilst it was to be hoped that the island which now required an annual import of nearly 5,000,000 bushels of rice would before long grow sufficient for its own requirement."

The opening address of the president of the section, Mr. Francis Galton, who has made hereditariness almost a science of his own, was of the greatest interest, but to go into it would carry us somewhat far afield.

Mr. Woods, C.E., the president of the Mechanical Science Section, took for the subject of his opening address the very important one of continuous brakes to trains. After a long series of preventible accidents, it is to be hoped we are at last getting to that point when it will be considered culpable in a railway company to omit the provision of this only really efficient form of brake for high speeds. Mr. Woods dwelt, among other points, on the desirability of getting all the railways to adopt the same system, as that would much accelerate the adaptation of the system, and get rid of all difficulties arising from running the carriages of one company in conjunction with those of another. We may here enforce the necessity of one proviso among those catalogued by Mr. Woods, namely, that the brake should be so constructed and applied as to avoid sudden shocks, which contribute to the wear and tear both of the machinery and of the unfortunate passengers. This violent jerking and noisy action is a standing nuisance on many trains on the Metropolitan Railway, where the continuous (or nearly continuous) brake is used. The different trains vary much, however, in this respect, proving that it is possible to construct or to apply the brake without such violent concussions as passengers on that line are often subject to. The papers in the Mechanical Section on the subject of lighthouses were of much interest. Sir William Thomson led the subject with a paper, in the course of which, in urging the importance of giving a distinctive character to the Needles Light, he suggested a new modification of the system of distinctive revolving lights, consisting in reversing the old system, and instead of only *showing* the light for a moment, only *eclipsing* it for a moment. It appears from his statement that in not a few cases the long intervals elapsing between the flashes of light in the lanterns on the revolving system have led to their being overlooked, or only found with great difficulty, by ships contending with bad and thick weather. He proposes instead to give the revolving lights flashes of darkness, to obscure them but for a moment: and further suggests that the duration and proportionate time of succession of the eclipses could be so arranged upon a definite system as to form a complete means of distinguishing every light on the coast by the mere arrangement of its eclipses. This is an admirable idea; and as to the proposition to substitute temporary eclipses for temporary flashes, it seems such mere common sense that the wonder is that it should have been overlooked or should need any recommendation at all. To hide a light, for the sight of which men on a ship are depending for safety, for a minute and a half, and then permit it to shine for a second, and this merely for the purpose of distinguishing it from other lights, does seem, when attention is directed to it, somewhat ludicrous.

It is with something like a pang that we follow up the account of the same day's proceedings, and read that the Eddystone lighthouse, that national possession, the memorial of the genius of a great English engineer, is found behind the age, and is to be taken down. Mr. Douglass, the engineer to the Trinity House, read out the fate of the noble work, mentioning among other things, as an instance of the advance of light-house science, that the present lantern of the Eddystone has an intensity 109 times greater than that of Smeaton's original candle-light, at only four-fifths the original cost per hour. Nevertheless, Eddystone's increased lighting powers will not serve to avert his doom; he is to be succeeded by a new and improved erection, for he is not "equal to the present first-class lights." The President of the section hoped that the old lighthouse would be carefully taken down, and built up somewhere on shore, as a memorial of one of the great early efforts of English engineering. Marine matters seem to have been to the fore in this section, for Sir W. Thomson read a paper on a new method of taking soundings in deep water, whereby the soundings were not affected by the progress of the ship through the water,* and the true temperature of the lowest stratum of water registered, the best apparatus in present use giving only the coldest temperature, which may or may not be that of the lowest stratum the lead passes through. In regard to the mechanical means of obtaining vertical soundings while the ship is in motion, it may be mentioned that Sir W. Thomson recommends a thin strong pianoforte wire (14 lb. to the mile) in the place of an ordinary line. On the same day, and following this, Mr. Margary read a paper on the Saltash Bridge; and Mr. Baldwin Latham described the means adopted by him for intercepting the rainfall from the sewers constructed by him at Longton.

In the Mechanical Section, on the last day of the sitting, Mr. F. J. Bramwell, C.E., read a very practical paper "On a New Method of Circulating Hot Water through very large Buildings," as carried out at the New Lunatic Asylum, Banstead Downs,—a building extending over many acres.† For economy and simplicity of management it was desirable that the whole of this extensive acreage of buildings should be heated and supplied with hot water for baths, &c., from a single source of heat:—

"In a single house, or even in a single large building, the circulation of hot water could be automatically maintained by the mere difference in gravity between the hotter ascending column of water and the cooler and heavier descending column. The power thus obtained, however, was wholly inadequate to cope with the thousands of yards—miles, indeed,—of pipes at Banstead. To overcome the difficulty, and to enable the building to be warmed and supplied from a single source of heat, the author had devised the plan of placing in the engine-house a centrifugal pump, which forced the water along the outgoing main, and exhausted it along the return main. These mains were conveyed side by side in trenches throughout the whole enormous establishment. They were not connected at their ends, but at each block of buildings a pipe, controlled by a valve, led the hot water into that block, and supplied the whole of the heating coils therein, the outlet-pipe from this system of coils being united to the return main. Thus the water circulates through each block with the velocity due to the difference of pressure between the outgoing and the return mains, instead of circulating with the feeble velocity arising from a mere difference in temperature. It would be seen that there was practically no waste of fuel in the employment of steam to work the centrifugal engine, because the waste steam of the engine was used to aid in heating the water."

The writer of the paper proceeded to point out, what is of even more interest than the application of such a system to a large public building, that it would be possible thus to lay on to groups of dwellings, such as streets of workmen's houses, a supply of hot water for heating their dwellings, and for washing purposes. This is certainly a suggestion worth serious consideration, as there can be little doubt that the inhabitants of such dwellings could thus have their heating at a more economical rate than could be accomplished by burning coal in separate fire-places; and this, again, has a bearing upon the question of remunerative return from dwellings at low rents, alluded to just now.

On the Saturday there was a large excursion to Exeter, and a lunch, at which the Bishop of Exeter made some remarks which might seem to supply that generalising view which we have noticed was absent in the president's address. Dwelling on the ever-increasing division of study, he suggested the painful possibility that such division might end in proving the better indeed for the study, but the worse for the student. "The mathematician might end with a wonderful power of solving problems, but with a loss of power to appreciate what lies outside mathematics. It was for this reason that all who study should correct, by frequent intercourse, the narrowness that results from exclusive devotion to particular subjects." Wise words, and well worth attention. Nor do we like any less the bishop's concluding formula, that "the more study was pushed on the nearer would all the students come together." That, in fact, is not a bad expression of the true *raison d'être* of the British Association.

* At present a ship has to be brought to in order to obtain soundings in deep water; with even a moderate speed it is impossible to reach the bottom from the extent to which the line is carried out of the perpendicular by the motion of the ship.

† View and plans are given in the *Builder*, pp. 267, 289, *ante*.

THE LEVIATHAN OF RAILWAYS.

Although the London and North-Western Railway is not the oldest of our British railways, nor even that which has the longest length of line, it may certainly claim to take front rank amongst them, whilst, as a passenger railway, it occupies unquestionably the premier position. In some of the contributory traffic receipts there are companies possessing larger revenues; but, taken as a whole, the London and North-Western is, in this respect, as in others, the largest. It has a princely revenue, and alike in extent, in the wide tract of country which it serves, and in the traffic it carries, it has become one of the most remarkable of the developments of railway enterprise in the world. Some of the lines it embodies are of older date; but, under its present designation, the London and North-Western Railway is not the oldest of the great companies. Even of recent years its growth has been great; for whilst, eight years ago, its capital was over 60,000,000*l.* sterling, it has continued to grow until at the end of last year it was over 76,000,000*l.* Or, stated more accurately, it was at the later date 76,155,378*l.*, comprised in stock and shares to the amount of 53,179,195*l.*, and in loans and debenture stock, 22,976,183*l.* It may, however, indicate the vastness of the extent to which the company's stock has become an investment, if it be stated that many of the shareholders hold stock to the extent of thousands of pounds, and that there are several who are shareholders to the extent of from 5,000*l.* to (in at least one case) 68,000*l.* Out of the 76,000,000*l.* of the authorised capital, that created or sanctioned amounts to over 69,475,000*l.*, and the total amount received is very little short of the last-named amount. And here it may be proper to state how that amount has been expended. On lines open for traffic close upon 52,000,000*l.* have been spent; on lines now in course of construction some 500,000*l.*; on steamboats nearly 300,000*l.*; on rolling stock over 7,250,000*l.*; and the remainder is chiefly expended in subscriptions to other railways and on payments to leased lines. The half-yearly expenditure on capital account is at the rate of a million, of which half is usually expended in additions to works and accommodation on the lines that are open for traffic; a quarter is spent on lines and works in course of construction, and the remainder is usually divided between the rolling stock expenditure, and that for subscriptions to other companies, to leased lines, and for the requirements of the steamboat traffic. The rolling stock of the company is necessarily large. The engines number 2,050, and there are 1,732 tenders. The coaching stock includes 1,182 first-class and composite carriages, only 183 second-class carriages, and 1,182 third-class. There are 37 travelling post-offices and post-office tenders; the horse-boxes number 553; the carriage-trucks, 539; the various vans, 650, and the parcel carts, 111. The merchandise traffic is carried by 36,611 goods wagons; the cattle traffic needs 1,967 cattle-wagons and 100 sheep-vans. There are over 3,031 locomotive wagons, 1,712 carts and lorries, and 1,614 horses; so that it may be said that, although for some classes of traffic other companies may have made larger provisions of rolling-stock, that of the London and North-Western would appear to be ample. As to the result of the expenditure of this capital, it may be said that this leviathan of railways carries about 4,000,000 passengers every month, and every month about 2,000,000 tons of merchandise and mineral goods, whilst its monthly revenue may be roughly estimated at about three-quarters of a million sterling. The passenger-traffic preponderates, and it may be interesting to show what are the numbers carried in the various classes, and what are the receipts for each class. The official figures are for the half-year, and it may be best to state them for that period of time. For six months, then, the numbers of passengers carried and the receipts from the traffic were as follows:—By the first-class, 1,631,328 persons travelled, and the receipts were 359,116*l.*; by the second-class there were 3,095,263 passengers; and by the third, 19,536,145; the second-class passengers yielding a revenue of 298,609*l.*, and the third-class, 999,267*l.* In addition to these there were the holders of season-tickets, 12,280 in number, the receipts from which source were 46,939*l.*; the parcels, &c., and the mail traffic,—the latter of which alone gave 73,754*l.* in the half-year, more, we believe, than any other railway receives from the Post-office for the conveyance of mails. It is evident from the figures how vast a proportion of the traffic on the London and North-Western Railway is of the cheapest class, for where one person travels first-class, two travel second-class, and twelve travel third-class. The receipts, as is well known, are not in the same exact proportion; the first-class yields more than the second, whilst the third-class yields more than both united, but in this respect the experience of the company is that generally experienced by railway companies, for although the proportions may vary slightly in detail, the principle is the same. Passing away from the coaching traffic, the merchandise traffic yields to the London and North-Western Railway Company the half-yearly sum of 1,627,621*l.* net; the live stock one in the same interval of 119,511*l.*, and the minerals return a little over a million,—1,018,420*l.* in the half-year. There are subsidiary receipts, which bring up the total receipts of the company to about 4,830,000*l.* in the six months,—a magnificent revenue for a railway company, and one probably unequalled in the world.

A large portion of this revenue is necessarily spent in the earning of the whole. In the half-year some 604,400*l.* are expended in the maintenance of way and works; and as there are 1,553 miles maintained, it is not surprising to learn that 256,000*l.* are spent for materials, and above 130,000*l.* in wages for the maintenance of permanent way. The bulk of the remainder of the total under this head is spent in the repairs to stations, and similar works. Locomotive power is almost as costly as the maintenance of way, for 586,034*l.* are spent in the half-year on it. Out of this sum wages claim one-half, and coal and coke the large sum of 138,179*l.*, which, however, is small to that spent a few years ago. On the repairs and renewals to carriages and wagons, the half-yearly charge is between 160,000*l.* and 170,000*l.*, materials claiming the great bulk. The traffic expenses are large,—833,677*l.* in the half-year,—much more than one-half of which is spent in salaries and wages. The general charges,—for direction, auditing, salaries of the chief officials, &c.,—are about 94,000*l.*, and the steamboat expenses amount to about 30,000*l.* in the half-year.

As showing the extent to which the London and North-Western Company is an employer of labour, it may be said that for wages and salaries it pays nearly 2½ millions sterling yearly under these two heads, whilst other sums are probably included under various heads, such as repairs, &c. As to the length of the company's lines, it may be said that it owns above 1,000 miles constructed, whilst a further amount is partly owned or leased. Thus the total miles authorised are 1,709, and of this amount 1,615 are constructed; but, including the foreign lines worked over, the miles worked by the engines are 2,156 miles. Over this extent of line the passenger trains ran in the half-year a little more than eight million miles, and the goods and mineral trains ran rather more than an equal length, so that the train-mileage run in the half-year is close upon 16½ millions. These figures will in some measure indicate from official sources the extent, the condition, and the revenue of the company.

Not only has it its own great trunk line, but it has leased lines such as the Shropshire Union, the Chester and Holyhead, and the Kendal and Windermere, whilst it is largely interested in,

and to some extent controls, about a dozen other lines in England and Ireland. It has in course of construction lines between Seaton and Wansford, and Bettws and Festiniog, as well as extensions of several of its Welsh and other branches. Running due north-west from London, and having important and subsidiary feeders at several points, the great trunk line of the London and North-Western is one of the chief lines, in itself, of the country. The system embraces and partly serves the four chief towns and cities of England, it taps a score of counties; and most of the important towns between London and Carlisle are more or less served by this leviathan of railways. Not this alone, but some of the most charming of the health resorts of the country are reached by it. It has consolidated and built up a town which one of the companies it succeeded — the Grand Junction Railway — laid the foundation of years ago. In Crewe, where less than forty years ago there were only 200 inhabitants, and where now there are more than ten times that number, the London and North-Western has become, as an employer of labour, almost omnipotent. It employs there in the great shops above five thousand workmen, and its works there extend over eighty-five acres. It makes the gas for the town, it brings for it water for miles, it has built baths and wash-houses, provided an institute, erected hundreds of workmen's dwellings, built a church and three schools, and assisted in the erection of chapels; and now Crewe might be described as a great monument of the leviathan British railway. With such a workshop, it needs no small constituency to cause traffic enough to find work; but drawing that traffic from such a great and rich gathering-ground as we have seen, the great stream of traffic flows on in a ratio almost steadily increasing. In addition to the carriage of so vast a body of passengers, it serves some of the richest of our mineral districts. With one exception, it conveys the largest quantity of coal to London of any railway company; it enters into the great hematite iron district to the north-west; some of the less productive of the lead-mining districts are served by it; and the textile trades are largely dependent on it for the conveyance of their goods. Thus, drawing its revenue from the largest of our British industries, its position should be one secure, and its prospects improving with the development of the great industries and districts it serves as their "common carrier." It is in itself no small fruit of the results of British enterprise, and when it is remembered that it is merely the means to further other enterprises of even greater moment, it will indicate in some degree the extent of our trading resources and the ratio in which they have,—more especially of recent years,—been increasing and fructifying.

CLUN CHURCH.

CLUN, though now a very small, sleepy, and altogether unimportant village in an obscure part of Shropshire, was once the chief seat of a marcher lordship, and its castle, of which the remains, in earthworks and masonry, are not inconsiderable, was the cradle of the great house of Fitz Alan, Earls of Arundel, from whom, when Lords of Oswaldestre, and before their acquisition of Clun, came the unfortunate house of Stuart, whose ancester was Alanus Dapifer.

The church is more worthy of the ancient glories of the place than consistent with its decayed condition; for it is a very fine building, in the Norman and Early English styles, and has recently been fortunate enough to fall into the hands of Mr. Street, who is effecting its restoration in a manner which could not justly be found fault with by even the most captious archæologist. We understand that there are funds available for this purpose, and such as allow the free use of oak for the roofs and fittings, and of a remarkably fine-grained and pleasant-coloured stone for the more substantial repairs. Though much that is and will be seen is entirely new, all is upon the old lines, and either copied precisely from the old forms and mouldings, or, where this was impossible, supplied with a taste and feeling entirely in the spirit of the original work.

The church is composed of a western tower, nave, aisles, and south porch.

The *tower* is square, and very massive, intended probably for defence. It has a basement and two upper floors. The walls are immensely thick, and the south face is covered by an enormous buttress, which at least doubles the wall, and dies at the first-floor level. It has been added at some early period, when probably the weight of the tower threatened subsidence. It conceals half a small Norman doorway in the end wall of the north aisle. The west doorway is plain but good, Norman, of large size. A small door of the same date opens into the nave. The upper floors seem to be of Early English date. They are also low and strong, with coupled lancet windows, and above it is a plain, low, pyramidal roof of timber, with a smaller raised pyramid rising out of its centre. Near the top of the wall are some holes, which may possibly have been intended to carry a brattice or hoarding for its defence. The towers of More Church and of Hope-Say, in the same county, are of similar type.

The *nave* is Norman. On each side is an arcade of four transition arches, with short, squat cylindrical piers, with rather delicate base mouldings of a double roll and hollow, the latter somewhat exaggerated. The base is square and chamfered. The capitals are rather thin. They are all alike, and fluted beneath an abacus with a hollow chamfer. The arches are of two members, with plain bold beads replacing the angles, and between them a well-cut chevron band. One arch,—that eastwards, in the south side,—is plainer than the rest, and full-centred. The others have a drip; this is plain.

The south clearstory has five plain, small full-centred windows, in deep and rather long splayed recesses. In the west wall, the door into the tower looks Early English, though from the tower face it has a Norman aspect. Above it is a small window opening from the upper part of the tower.

The *chancel* is of the width of the nave, and there is no arch between them. The east window is a triplet, lancet, with the central arch stilted. The flanking shafts are Purbeck marble, and the whole rests on a bold string. Right and left, in the side walls, are two side windows, also lancet and shafted, and resting on a string, those on the south side raised, to allow of a piscina of three coupled lancets, and three sedilia with equilateral heads, and divided by two pairs of Purbeck shafts, set in file, one before the other. In the north wall is a lancet arch opening into the north aisle; in the south wall is a plain full-centred arch opening into the south aisle. It contains an Early English screen in oak, and above is a plain Norman window. Over the central east window is suspended from the roof a canopy, composed of thirty panelled squares in oak, and at its western angles and centre are three angels. The roof is supported by fifteen curved ribs, the space above trefoiled and quatrefoiled, and the sub-rafters of the roof formed in quatrefoils.

The *south aisle* is Norman, narrow, with a lean-to roof, lately restored in oak. The doorway is plain Norman, with flanking shafts. There are plain Norman windows at each end, and three in the south side. At the east end the aisle is prolonged parallel to the chancel, and the part next the chancel is raised three steps, and seems to have been a chapel.

The *north aisle*, originally Norman, has been rebuilt of larger dimensions, in the Early English period. In its west end are two coupled lancets, and at its east end is a single one. In the north wall are four plain lancets; at its west end a large plain late Norman door opening into the porch, with delicate mouldings and flanking shafts. Also, at the east end, a small door, of a Decorated type, having outside a bold drip, with a band of dog-tooth moulding, and in the wall above a bear's head, muzzled, as a corbel. In the outer wall, east of this door, is a sepulchre, with a drop arch, cinquefoiled, with double rows of the ball-flower, and a drip of a scroll-roll section. Near the porch door is a small door opening on a flight of stairs, corbelled out against the east wall of the porch, and ascending to the parvise chamber. The aisle, like that on the south, is prolonged eastward, and in its eastern part is a door into the chancel. This end may also have been a chapel. The roof, a noble piece of carpentry, has eleven ribs, similar to those of the nave and chancel, but the hammer-beams are supported by carved figures of angels. Each roof also has a broad lateral band of oak panelling, carved as small windows of two lights, with foliated heads. The work generally is very delicate and beautiful.

The font has a heavy octagonal basin resting on eight cylindrical piers of stone. The pulpit is of flat carved oak of Tudor date, and round the north-east chapel is some old Tudor panelling, with griffins carved in relief, coarse and flat, but very effective work.

There is in this quarter also a mural tablet of arms in stone, but no inscription. They are quarterly of four:—1. A bend cotised; 2. Fretty, a canton; 3. Two lions passant in pale; 4. A fesse dancette between three roundels, on each an escalop; crest, a demi-lion issuant from a castle triple-towered; supporters, two angels.

A brass plate above is the memorial of Sir Robert Howard, K.B., fifth son of Thomas, Earl of Suffolk, Lord High Treasurer, died 22nd April, 1653. He married Katherine Nevill, daughter of Henry, Lord Abergavenny, and had Henry, Edward, and Robert.

About 100 yards south of the church is a very curious ravine, broad and deep, down which a brook flows eastwards, and then, turning abruptly northwards, falls into the Clun. Opposite the church this ravine has been rendered more steep by art, and the earth removed has been piled up as a large bank on the inner side of the ditch. This ravine must have been a great addition to the defences of the town. OBSERVER.

A FRENCH MANUFACTURING TOWN.

THE time will soon be approaching when the rural districts and provincial towns of France will, by their electoral vote, be making or marring the future of their country. Among most influential places at such a time are the manufacturing towns, where the intelligence of the people is keener and more susceptible than in the country villages. But very few of the manufacturing towns of France, to a hasty passer-by, would be recognised as such when compared to those in this country. It may be interesting at the present time to take a very typical town (Louviers), and briefly describe its chief characteristics as a French manufacturing town of the most flourishing kind, showing but few outward signs of the occupations of its citizens. It numbers between 10,000 and 11,000 inhabitants, which, when we call to mind Leeds or Nottingham, is strikingly few. Still, with Elbœuf and Sedan of warlike renown, it forms one of the three largest seats of the French cloth manufacture. But no one who finds himself set down in Louviers would at first believe that he was in a busy trade centre, for it is as quiet and unbustling as some Thames-side village, whose pleasant monotony is only broken by the sudden incursion of a summer regatta; and, except on Sunday evening, when the factory-hands are returning from some excursion down the line, its streets are quiet and unthronged. You come upon it on your journey from Evreux to the main line which connects Rouen with Paris. It may fairly be said of it that "the past and present here unite," for in the centre of the town, pressed about by narrow streets and small houses, stands the church of Notre Dame, a structure parts of which date from the thirteenth century. Like most of those churches and cathedrals which make Normandy so pleasant a travelling ground for the æsthetic tourist, its most characteristic and most remarkable features are in the florid Flamboyant style; but the portions which enlist the admiration of the beholder are spoiled by much that is commonplace, not to say ugly. Before he becomes well acquainted with the intricacies of the queer little endless lanes of this town, the traveller continually finds himself, after a short walk, at his starting-point again. Through the old and lower part,—that is, the manufacturing part,—of the town, the Eure has been subdivided into endless branches. You cross one little bridge and pass one factory with the water rushing beneath it, only suddenly to come upon another bridge and another and similar building. It is this water-power which makes Louviers so picturesque, and so free from the smoke and the hideous chimneys which we associate with the name of a manufacturing town. In the spring time the laburnums and the lilacs brighten the little plots of garden ground, and as summer draws along, their golden and purple blossoms drop into the smooth waters which they overhang, and go rushing down beneath the little wooden bridges. Again, as you stand at the hotel door, a man in a blue blouse wheels past a barrowful of cloth, and you perceive in him an artisan of Normandy. When you take your place at the *table d'hôte* in the Hôtel du Mouton, you are surprised to find fifteen or twenty respectable-looking middle-class gentlemen, from twenty to seventy years of age, seated round the table. But you soon find from the conversation that these are some of the masters and millowners of Louviers. The talk is of their business, or of the engagement between old

Pierre Laplace's son and the daughter of the rising citizen, Henri Gaillon, whose dowry, before you recollect it is but francs, seems worthy of the richest millionaire of France. And you find, too, that these men value highly the picturesqueness of neighbouring Evreux, and regard Rouen as a city of cities, and second only to that unapproachable town, Paris. They are disposed to be friendly, but are rather inclined to wonder how an English traveller cares to locate himself in a town whose chief merit in their eyes is that it preserves more than forty factories, and has for years been famous for its cloth and its wool yarn; and very soon they return to their local or political gossip (which all the Prefets in the world cannot stop) and their business talk, which is only disturbed when the omnibus rattles into the courtyard with a new arrival from the railway station. Indeed, this omnibus with its driver is the most lively thing in Louviers. It appears to be perpetually hurrying over the stony streets, and the driver, quite the Mark Tapley, not only of the hotel, but of the station, seems to be in an endless state of glee, and as for the Roman-nosed grey Flanders horse, he seems to be never tired, and always ready to start. The first thing that wakes you in the morning is the yellow omnibus, and the last thing you hear at night as you fall asleep is the same conveyance coming back from the last train. But when we get to the outskirts of Louviers, they are found to consist of a circle of chestnut-lined boulevards, very picturesque in the early summer, when the broad leaves are fresh, and the white cones of blossom are first becoming beautiful; and here and there from the higher ground you see the broad valley of the Eure stretching away towards the Seine, and you scarcely feel that you are in a manufacturing town. The æsthetic beauties of the churches of Rouen, of Evreux, and of Caen prevent most people tarrying at Louviers, but the very fact of the contrast it presents to a cathedral town such as Evreux, and the still more striking difference which exists between it and a similar town in England, render it a place of not a little interest; for, though a series of cathedrals forms a marked feature in the character of a country, the manufacturing towns are in their own way equally remarkable and noteworthy.

DWELLINGS IN COREA.

Though only separated from China by a wooden palisade, Corea has been almost a *terra incognita* to even the Chinese and Japanese, until within a very short time ago. The Coreans have ever regarded their neighbours with the greatest possible jealousy, and confined their intercourse with them to a limited coast traffic, which has been principally carried on by smugglers. Shipwrecked Japanese were not properly treated by the Coreans, nor were Corean castaways received by the Japanese in a becoming manner. In fact, for years there has been no love lost between the two countries, and the few attempts made on the part of the Japanese to get information respecting the capacity of Corea for trade and the condition of the Corean people have been fruitless. A treaty, however, was signed last year which establishes friendly and commercial relations between Corea and Japan. This may be regarded as the first step towards the opening up of intercourse with the outer barbarians. While the negotiations were carried on one of the members of the Japanese mission made a few interesting notes.

It would appear that there is some law in Corea limiting the size of the houses of the common people, as they are all domiciled in dwellings about 10 ft. or 12 ft. square, and little better than dog-kennels. The walls consist of a mixture of stone and earth, and the roofs of rice-straw thatch. The floors are made of compact hardened earth, over which oiled paper is spread, and on it the people sit. Few of the houses have ceilings, which consist merely of oiled paper stretched from the uprights supporting the roof. The shops are entered through doors on which are inscribed sayings of a graceful nature in the Chinese character. Under the floor, and extending throughout its whole length, is a horizontal passage: at one end of this a fire is lighted, the smoke going out at the other; thus the house is warmed. The fuel used is composed of reeds and rushes. All the Government offices have paper doors and windows, the frames of which are so clumsy and heavy that but little light is admitted into the rooms. Chairs are a luxury in which only the highest indulge, and are rudely-made seats painted with persimmon juice, and decorated with leopard skins. The commonality, after leaving their shoes outside their houses, squat on the earthen floor with their legs straight out. In respect of conveniences, both the houses and the offices are deficient, and for similar reasons the public roads are filthy. The widest roads are from 15 ft. to 20 ft. in breadth, the narrower ones from 8 ft. to 9 ft. There is no provision for carrying off the rain, and they are apparently never repaired or improved; consequently they are fearfully rough and dirty, and the monuments raised to defunct local officials, which are supposed to be ornamental, are not much better. The city walls of Kôk'wa, the capital, are about five miles in circumference, and from 2 ft. to 3 ft. in height, partly constructed of mud and stone and partly of brick. The four gates bear evidence that, at some remote period in Corean history, they were carefully painted, and the houses within are scattered irregularly, and are only 6 ft. to 7 ft. high.

As regards clothing, both the upper and lower garments of the people are white, and not ornamented in any way. Some of the subordinate officials wear silk, but of a very coarse texture. The higher dress in white silk, and the highest in silk of a light pink colour; the skirts of the dresses bear so close a resemblance to wings that they are called "additional wings." When approaching the land the Coreans present the appearance of snow herons, but on closer inspection they look like the "lazy priests" of Japan, whose garments may once have been white, but are so no longer. The head-dress is a large round hat, fastened by means of strings passing under the chin, and are said to be made of horse-hair by the native women. Custom exacts that the hat be placed on the head when greeting a friend. The Coreans do not shave the head, but wear the hair long, and fasten it with pins into a bunch on the top of the head. There are no public baths or barbers, and if we are to believe our Japanese informant, the Coreans do not even bathe or wash themselves, excepting in the warmer days of summer, when they go to the river or sea-shore. The envoys were obliged to send to their ships for tubs, as there was no such thing as a bath to be had on shore for love or money.

The Coreans eat a great deal of meat and "fat stuff." When the treaty was signed the mission were entertained with "a sort of confectionary made of sugar, flour, and oil, cut into squares about 2 in. each way; a great heap of boiled eggs; a pudding of flour 'goma' (*sesamum orientalis*) and honey; dried persimmons; pine seeds; honey-like (*sic*) food covered with roasted rice, painted red and white; macaroni soup, with fowl; boiled legs of pork; and wine with everything." The wine is strong, but of an inferior quality. The dishes were of earthen ware, like the "Imariyaki" (a kind of porcelain) of Japan or the "Goshi" of China. The table used on the occasion was square, rudely made, and painted with persimmon juice. Oiled paper was used for a table-cloth, and the wine was served in copper vessels.

Tea does not seem to grow in the country, nor do the Coreans appear to be acquainted with the taste of it. The chief drink is an infusion of dried yinseng or ginger and dried orange peel. When ginger cannot be obtained, for it does not grow in Corea, honey is used instead. The soil, as far as could be seen, is harsh and the vegetation sparse and stunted. Wood is very scarce in all parts, no oak, cedar, plum, or cherry, only pine, which is the principal building material.

The Corean military forces do not seem to be very formidable. Some 1,500 men were in Kôk'wa when the mission arrived. They wore wooden hats, and were armed with small matchlocks and swords, the blades of which were imported from Japan. Their dress "seems well enough for fine weather, but bad for rain." Bodies are interred in the paddy-fields, in gardens, woods, or on the hills, or wherever the inclination of the family may dictate, so that there are no regular burying-places. Under ordinary circumstances a heap of earth is thrown up over the grave, and when this has disappeared by the operation of natural causes, which it does in thirty or forty years, the soil is again brought into cultivation. It is said that when the French went to Corea they destroyed the city of Kôk'wa by fire, and took possession of some precious relics which had been buried with certain ancestors of the Corean kings; but the Japanese think it more probable that some of the Coreans themselves, taking advantage of the time, dug up and carried off the treasures, and afterwards imputed the outrage to the invaders.

TEWKESBURY ABBEY.

In the paper read during the last excursion of the Worcester Diocesan Architectural and Archæological Society, in conjunction with the Royal Archæological Institute, Mr. Thomas Blashill, architect, having conducted the visitors over the abbey, read a paper, of which the following is the substance:—

Conspicuous among the earliest works of the great church-builders who rose up in England after the Norman Conquest, are the three abbey churches of Gloucester, Pershore, and Tewkesbury. They were built in near neighbourhood, and were essentially of the same type, a type which had certain peculiarities that we find nowhere else. We may, therefore, safely assume that the same hand designed the three. A monastery had existed here since the seventh century. In the latter part of the eleventh century it was a mere dependency of the Benedictine Abbey of Cranbourn. But at that period the establishment was removed from Cranbourn to Tewkesbury, and then an entirely new monastery required to be built, the conventual buildings of which were completed ready for habitation in 1102. The founder of the new order of things was Robert Fitz-Hamon, to whom his relative William Rufus had granted the honour of Gloucester, which included the lordship of Tewkesbury, and he and his descendants were patrons of the abbey and promoters of all the important works that were done here until shortly before the time when the monastery was dissolved in 1539. Fitz-Hamon died the death of a warrior in 1107, and his eldest daughter marrying Robert, the natural son of Henry I., he became Earl of Gloucester and the patron of the abbey, and in his presence the church was consecrated with great state on November 20th, 1123. Although he is said to have built a wooden spire, covered with lead, it is probable that the great central tower, so much more ornate than the rest of the building, was not then built, but we may fairly infer from the existing structure the plan and general design of the church as it stood in its stern grandeur on the consecration-day. The plan was, no doubt, that which was then common, consisting of a long nave, with aisles, and a transept, the choir (or more properly the presbytery) being very short, and ending in an apse. So much of the plan still exists, and at the east side of the south arm of the transept remains a semicircular chapel, as was usual, the transept of Pershore still showing the like. A similar chapel opened out from the north transept, and we may reasonably conclude that the church terminated to the east with a lady-chapel and two other small chapels that projected from the aisle which went round the apse. Another feature which we see here, and which is common in churches of the same date, is the carrying of the central tower absolutely without any projection of the four great piers into the area of the church, so that nave, tower, and choir preserved one clear width throughout. The great feature which distinguishes the three churches I have named is the immense height of the circular pillars of the nave, which are here 30 ft. high, or 3 ft. higher than the nave pillars at Gloucester. A very low and insignificant gallery runs over them, and above it were the original windows of the clear-story. In each church the pillars of the choir were low, and the aisle that ran round the choir was in two stories, a second arcade of low arches being imposed upon the lower arcade. This upper aisle, or triforium, was easily accessible by way of the staircase at the angles of the transepts. Owing to the all but total destruction of the nave at Pershore, we cannot make any detailed comparison with it, but comparing this church with that of Gloucester, there is here a much greater plainness and severity in all the leading features. But Tewkesbury is distinguished from all existing churches by the great arch which spans the entire width of the west front of the nave. It has been conjectured that this archway opened into a large vestibule, and that the true west wall of the nave was a few feet within it; it has also been supposed that a great western tower existed outside it, and that in fact it was an ordinary tower arch opening out from the west end of the nave. But it is clear from the masonry that is now exposed to view that it was filled in with a wall which

would have some arrangement of windows, and probably a door. On each side of this arch the original design was to build a large tower, each tower standing over the end of one of the aisles. The walls must have been carried up as high as the aisle roofs, for portions of them still exist in those roofs, roughly broken off from the walls of the nave, and there also still exist the original corbels of the aisle roofs; but nothing more than the smaller turrets over the staircases appear to have been actually done. These turrets have been rather extensively repaired; I feel sure that the groups of conical finials at the top have been wholly rebuilt, the original design being now doubtful, but we know from old drawings that something of the same general outline existed there towards the end of the seventeenth century. The great central tower (which may be compared with that of St. Alban's, but not with the towers of Durham, which belong to the following century), is a very fine specimen of fully-developed twelfth-century architecture. Rich arcades with windows are formed in it, which were visible from the floor of the church until the erection of the present vaulted ceiling. In the interior of the tower we can see these fine arcades, which are part of the original construction; above them is the great mass of the tower, of different workmanship, and built of different stone, which, together with its design, indicate a later period in the twelfth century for its construction. Originally the tower must have had four square angle pinnacles, which in the fourteenth century gave place to groups of light crocketed pinnacles, with battlements between them. The pinnacles which now exist were built in 1600, the tops of the old crocketed pinnacles being replaced above them. The great north porch is of the twelfth century; it has a chamber over it accessible from the church, and which had a circular-headed window, which is now filled up with the figure of the Blessed Virgin under a canopy. There are some slight remains of the monastic buildings of this period; they were burnt in 1178, and rebuilt, to be destroyed again, at least in part, and again rebuilt in the fifteenth century. The church remained without material alteration from the time of Earl Robert for 100 years, during which time this earl's son, William, and after him the husbands of two of his daughters, were successively Earls of Gloucester. One of these was Prince John, afterwards to be king. In 1221 Gilbert de Clare, Earl of Hertford, son of William's daughter, Amice, succeeded to the earldom of Gloucester, and the De Clares were patrons of the abbey for ninety-eight years, which period coincided with the best period of thirteenth-century and early fourteenth-century architecture. Of the very little work of the thirteenth century that remains in this county, some very fine specimens remain in this church.

In 1237 Prior Sipton built, or rebuilt, the chapel of St. Nicholas, which is supposed to be the small apsidal chapel on the east of the north transept, but a much larger and more elaborate work was carried out at about the same time at the end of the north transept. A handsome archway was opened through the north wall, giving access to a building resembling the nave of a small church, to the eastward of which was a chancel opening from it by a very graceful arch, divided by a central column and tracery. Great use was made of Purbeck marble in the capitals, bases, and detached shafts; the windows must have had a very fine arrangement of columns and arches, and I think it is clear that the east end had a fine triplet of lancet windows. It has been thought that this was the chapel of St. Eustatius, built by Prior Henry de Banbury, and dedicated in 1246; but it appears much more likely that a work of such size and beauty was built by the patrons of the abbey for a much more important object. We know that at this time, somewhat early in the fourteenth century, it was common to attach lady-chapels to the transepts of such churches as this on the side which was opposite to the monastic buildings. This was then the most convenient position; for where the nave was used as a parish church, as in this case, it gave the laity ready access to the shrine of the Virgin without interfering with the choir of the monks. In such a position in Bristol Cathedral is the building called the "Elder Lady Chapel," which is of a similar style to this. Here there was a chapel already existing in the angle of the choir and transept, and therefore this large chapel was built beyond the transept, with a finer effect than I remember to have seen elsewhere. The "Annals of Tewkesbury" state that in 1239 the church was dedicated "with the major altar in honour of the glorious Virgin Mary." I am inclined to think that this refers not to the major altar of the church, but the major altar of the Virgin, the small lady-chapel at the east end being still in use by the monks. I only throw out these suggestions for what they may be worth.

The last male De Clare was killed at Bannockburn in 1314, and his sister having soon after married Hugh De Spencer the younger, the favourite of Edward II., that family became the patrons of the Abbey until 1414, another period of about 100 years, which included nearly the whole duration of the fourteenth-century style of architecture. It was during this time that the great alterations were made which changed the eastern portion of the building from the simple arrangement of the twelfth century to the most fully developed form which was ever adopted for the chancels of our great churches, and materially altered all other parts of the church in correspondence therewith. It has been pointed out by Sir Gilbert Scott that this work must have been done by the same architect who built the towers of Pershore Abbey and of Salisbury Cathedral. The greater part of it was certainly done close to the time when Tewkesbury was in the possession of Elizabeth, the widow of the third Hugh De Spencer. She was a Montacute, the daughter of the Earl of Salisbury; we do not know whether this may have influenced the choice of the architect, or whether it is a mere coincidence. She held Tewkesbury from the death of Hugh, in 1349, to her own death in 1359, and her second husband, Sir Guy De Brian, Lord Welwyn, who lived till 1390, and was a benefactor of the Abbey, seems to have been closely concerned in the work. The mode in which this work was carried out deserves very careful attention.

The chapel attached to the end of the north transept had been built about 100 years; it was but slightly attached to the massive Norman walls, in which a settlement had taken place, perhaps sufficient to cause the ruin of the nave of the chapel, which either fell or was taken down, and a strong buttress placed against the transept; but the whole building was exceedingly light and fragile. The projecting chancel was preserved, a fine flying buttress and other strong buttresses being added to it; new windows were put in, and the vaulting reconstructed, new ridge ribs being added, the bosses of which now bear the arms of De Clare and De Spencer, indicating probably that it is the work of Hugh De Spencer, the husband of Isabella De Clare. A wide archway was formed in its south wall, and the existing chapel in that side was similarly joined to the north aisle of the choir. Even before this time the need of additional chapels must have been felt, for the monastery, instead of providing a separate parish church for the people, as was usual with the large Benedictine houses, had admitted the people into the nave, reserving for the monks the choir, the tower space, and the eastern end of the nave; thus two distinct classes of persons, who must be kept separate, had to be provided for, besides the lay brethren and guests of the monastery. To meet these requirements they now built a new aisle round the choir, and in place of the three small chapels of the old aisle they built six chapels and a vestry, the chapels radiating from the apse in the form called a chevette. This was not copied in any way from the thirteenth century chevette of Westminster Abbey, it was an idea that must have been perfectly familiar to all the leading people in England, for our long possession of French territory and the Continental wars in which the patrons of the Abbey were engaged, would cause many such examples to be seen by them. The central or easternmost of the three chapels would be the new Lady Chapel, accessible at proper time to the people, a screen being fixed between the great piers to enclose the choir of the monks. The most remarkable thing about this is that the new aisle and chapels were built before they thought of building the new arches and upper part of the choir. The assertion, which I have before made, has been disputed, but I think it is proved by an examination of the work. The new aisle was kept low in order that its vaulting should rest against the old twelfth-century choir just above the arches of the lower arcade, and below the openings into the upper arcade or triforium. This could never have been done deliberately if it had been intended to build the present choir, for not only are the aisle and chapels kept much lower than they need be,—too low indeed for good proportion,—but the spandrels of the vaulting were left to show below the new pointed arches of the choir. To get over this disfigurement they filled in the spandrels with diaper patterns, and provided new vaulting ribs to carry them. On looking at the work from the side next the aisles, we may see the parts of the old Norman capitals which were left to carry the vaulting, and notice how the old piers were raised on the side next the choir, in order to carry the new arches, the whole being certainly a clever piece of contrivance to meet an emergency, but not the deliberate design of men who saw from the first to what their work would extend. The new choir had no triforium, or second story, to the aisle, its great windows extending the whole height from the arches which carry it to the vaulted ceiling; therefore the large arches which had opened from the second story of the old aisles into the transept were filled in with windows, which are of very elegant design. The choir being built, vaulted ceilings were put to the rest of the church. Those of the transepts resemble that of the choir. The splendid vaulting of the nave, which bears on its bosses exquisite carvings representing the history of our Lord, seems to have followed.

BUILDINGS FOR WORKING MEN.

AMONGST the papers submitted at the Birmingham Domestic Economy Congress was the following by Mr. Robert Rawlinson, C.B.:—

In attempting to treat the question submitted to me, namely, "Buildings for Working Men," I have not prepared plans either for sites or for buildings, as these would have necessitated details into which I have not had time to enter, and which I think this Congress would not have time to discuss. Each site may require special plans and special details. Those whose duty it has been to inspect existing structures (I will not call them buildings) inhabited by working men all over the world, will, with few exceptions, find that they have been heaped or piled up out of the rudest materials and in the rudest forms. There has not been plan or thought to secure wholesome sites, and shelter in which health could be enjoyed. The results have been, and are, degraded populations and disease in excess. Buildings for working men should be placed on appropriate sites, and should be constructed out of sound materials. The site should be dry, and should be within one mile of the place of labour, if this is practicable, or rail or tram communication should be included in the rent.

Plan.—As to plans, the site and surrounding conditions must in some degree dictate the plan. In a town where land is very dear the block plan may be adopted, as in the Waterlow, Peabody, and other similar blocks of model dwellings, but where the price of land will allow of a more open arrangement, workmen's houses may be arranged in streets, but never in closed courts. The evils resulting from closed courts are many and great. There is not that privacy which is so necessary for family comfort; sunlight is excluded, and the circulation of air impeded; the children are an annoyance because there is no proper playground; and if there is one drunken, swearing, immoral family, all are liable to be tainted, all are made miserable. The evils resulting from court houses in towns has at length received legislative attention, and we have the Artisans' and Labourers' Dwellings Act, 1868, and the Labourers' Dwellings Improvement Act, 1875. Under the powers of this latter Act (which I do not need to describe to the people of Birmingham in detail), many existing evils will be remedied in town and country. Structures in which disease is generated and paupers are grown, until the relieving officer pays more than the rent in out-door relief, may now be swept from the face of the earth, and on an improved site new wholesome dwellings may be erected, the old site being cleared, sewered, and made wholesome. As Inspector under the Public Health Act, I have over and over again shown in my reports that court and cottage properties in towns existed, the value of which was not more than from three to five years' purchase, and that, area for area, the rent paid for some wretched den of a common lodging-house was more than the cost of a similar superficial area in Buckingham Palace. I have also shown that the money paid by a relieving officer was taken for the rent of the premises which bred the disease and poverty designed to be relieved, and that it would be far cheaper for the parish authorities to purchase such properties, pull them down, and build wholesome residences

where there should be a chance of morality and health. The Labourers' Dwellings Improvement Act, 1875, is, I am happy to say, the result. The question as to whose duty it is to provide wholesome buildings for working men may be discussed from several points of view, political, social, moral, and economical. It may be stated broadly and as a truth that:—

Firstly.—There is no value without human life. The fairest portion of this earth's surface can only remain a desert without inhabitants, and these must be working men.

Secondly.—Moral and healthy human life has the greatest value, and imparts the greatest value to all surrounding things, land, and houses.

Thirdly.—The value of healthy human life springs from labour. Hence, that country will be the richest in which active, useful labour most abounds, and is most prized.

A country cannot be great and powerful without working men. Human life is the prime source of value, and it is human law which creates property. A nation is an aggregate of individuals, and, consequently, as are those individuals, so will the nation be. Socialism, in some of its aspects, is not pleasant to contemplate, and yet socialism is at the root of national safety. The individual must be cared for and provided for by combination; but the less a State has to do with social combinations and arrangements, the better will it be for the entire community. It is, however, the duty of a State to enact just laws, and so to make morality practicable, to maintain order, and to punish crime; and when the use of this word "punish" can be dispensed with, it may be blotted from our dictionaries, as, in some forms, punishing crime begets crime.

Houses as they are.—Man, as he advances in civilisation, must be clothed and housed, each operation involving labour and wealth. As society is constituted, individual men cannot provide independently wholesome houses; these must, therefore, be provided for them (so far, involving landlord and tenant). Free trade in house construction has not worked advantageously for the tenants, as the fearful evils found to exist abundantly prove. Hovel construction in rural districts has pauperised entire agricultural parishes, and the slums of towns are known to be seats of disease, as also haunts of crime and vice. Investigations have ascertained the facts, and reports have set them forth, and the remedy. Good buildings for working men must now be provided. What constitutes a good building for a working man? The site must be dry, and must be capable of being sewered and drained. There are hundreds of sites in Great Britain which are damp, and which also are so low as to be subject to flooding, and cannot be drained without pumping. Good wholesome water should be available. There are thousands of cottages having no available water but from an impure source.

Buildings for working men should be of sound materials, brick or stone, not mud; and, for several reasons, not of timber, though timber houses may, in some districts, be the cheapest; but there is the risk of fire, and they are subject to vermin. Houses for working men should have sitting-room, kitchen, and scullery, and not fewer than three bedrooms. The meaning of the word "privy" should be realised. "Common privy" is a misnomer, and if more than one family is forced to use a privy in common, it is likely to be abused, to become filthy, and to be neglected. Each workman's house, whether in town or country, should have a water-closet convenience. A sitting-room and best bedroom each should not be less in area than 12 ft. square, and should have door, window, and fireplace. In a workman's house no room should be less in height than 9 ft. from floor to ceiling, the window should be capable of being opened from the top, and there should be means for ventilation from the ceiling. As houses are at present constructed, no care is taken to preserve the spaces betwixt (underneath) the ground and the floor, or the ceiling and the floor, clean; but rubbish and shavings are left in to breed vermin and aid fire if one occurs. Thousands of workmen's houses in town and country are placed on improper sites because the land is cheap. The place may be a swamp; or, worst of all, a mass of (privy) refuse filled in over old brickyards; or, a mass of chemical waste. A use of all such sites should be forbidden, and their occupation be prevented. In workmen's houses it will not be practicable to give each house every necessary convenience, such as accommodation for washing, drying, ironing, and mangling.

The establishment of baths and washhouses has shown what may be accomplished in this direction; and in place of building costly places (baths and washhouses), which are necessarily isolated and at long distances from working men's families, they should be small, compact, and multiplied over the entire inhabited area,—a bath and washing establishment for, say, each fifty houses,—that is, one on each acre of town area; if for twenty-five houses all the better. Such an arrangement would be of more practical use than adding an additional room to each workman's house. In the country, workmen's (labourers) cottages may have garden allotments.

The most comfortable and wholesome arrangements of workmen's houses in towns will be in streets, the houses on plan having front and back room, scullery, water-closet, and yard. The front street should not be less than 30 ft. in width, the back street not be less than 18 ft. in width. There may be about fifty such houses on each town acre, having a population of 250.

Cottages in the country should not exceed twenty-five to the acre, having a population of 125.

Model houses, in blocks, will of course occupy much less space, and accommodate greater numbers.

Narrow streets, narrow courts, and narrow back passages in towns accommodate more tenements, but at fearful cost to health and morals, as may be witnessed by any person who will visit and inspect them. I have inspected, measured, and tabulated such dwellings in many towns, the remembrance of which is but as the remembrance of a nightmare. To reach some inhabited court-houses I have had to press in edgeways.

Museums, fine-art galleries, reading-rooms, and libraries have been established. Markets, slaughter-houses, and baths and washhouses have been erected, and in some instances to an extent not required, when things of more pressing need have been neglected. Museums, fine-art galleries, and statues may abound, as in Continental towns, in the midst of unsewered streets undrained houses, and undrained pestilential suburbs. The unit man has not been considered in his dwelling. The outside of the platter has been cleansed, and the sepulchres are whited, and the world has been contented to admire and praise the magnificent cities. We shall learn in time that a clean city or village of plain but wholesome houses and cottages is relatively of more value than an unsewered and over-crowded city of palaces.

Recapitulation.—Human life is the only source of wealth, and is, consequently, the one thing having most value. Healthy human life has the greatest value, and therefore deserves such attention as will secure health to the entire population.

Defective house accommodation and defective sanitary arrangements have tended to produce disease in excess. It has been learned by experience, and found upon inquiry that, in over-crowded (and ruinous) parts of towns, where the sexes are massed together, there disease, vice, misery, and pauperism are found, the rate of mortality ranging up to 150 per thousand.

Working men cannot, under existing circumstances, build their dwelling-houses, but must inhabit such places as are available, the results being, when driven into crowded courts or ruinous tenements, that health is lost, premature death removes the father, and the mother and children go to the workhouse. If, therefore, working men must have houses provided for them in which health and moral order can be secured, it must be the duty of the municipality to see to this, and of the State to aid the local authority.

The strength of a nation is not exclusively in numbers, in personal accumulations of wealth, or in trade and manufacture; but rather in a free, healthy, self-supporting, religious, truthful, and working population. Wholesome buildings for working men are, therefore, at the root of a nation's power and endurance.

WILTSHIRE ARCHÆOLOGICAL SOCIETY.

THE annual meeting of this society was held on the 22nd ult. and two following days at Warminster, under the presidency of the Marquis of Bath, who, in his inaugural address, said that every kind of research that helped to bring out the history of the institutions under which we live, our language, laws, customs, arts, sciences, or religion, came under the head and fell within the scope of archæology. If we took a general view of the many different researches now carried on into antiquity, what was the result? It was that all who are so employed were assisting one another in throwing light upon the land they live in. As an illustration of the breadth of archæology, he instanced the archæology of language. We had first words, then words combined, and, variously pronounced, peculiar tongues and dialects. Most people called places by familiar names, without knowing from what these names were derived, and they used their common speech as they did the common coin of the realm, as a handy exchange and nothing more; but the truth was there was a great deal of curious history concealed in names and words of every kind. Without going a great way off, there was "Warminster," which had nothing to do with war; and "Clay Hill," where there was no clay. There was, in fact, not only much that was amusing, but much that was instructive, in the archæology of words; but there was something more important still. Their common speech, like the coin of the realm, wore out, and required to be renewed from time to time as the value and meaning became effaced. There were many words in their present translation of the Bible which bore to modern ears a sense different, in some instances quite contrary, to that which they had at the time the translation was made. Biblical scholars were their archæologists, and they carried with them the best wishes and sympathies of all. There were also in almost every county industrious antiquaries forming glossaries of words; and next they came from words to tongues, and there much service had been done by Professor Max Müller and Prince Lucien Bonaparte. To take an example from history: most history must be taken at second-hand from other writers and chroniclers who in their day copied from those who lived before them; and if any new history of an old period was written, it was from old matter being discovered which corrected the former accounts and put them in a new light. Whence did that knowledge come? From the discovery of ancient records. Another important contributor to the history of the land they lived in was the pickaxe archæologist. There were some periods of their history of which it was hopeless to discover any written record beyond what now existed. Britain was in round numbers for 400 years a Roman province, governed much in the way the English now governed India. Four hundred years was a long period, and admitted of a great deal being done and written; but if they inquired how much was written of contemporary history, they found it consisted of a few pages of Cæsar's "Commentaries," the "Life of Agricola," by Tacitus, some extracts from different writers, and the "Itinerary" of Antoninus, the whole of which might perhaps fill a *Times* newspaper and supplement, with perhaps an extra sheet; but they knew more now, and for that they were indebted to the pickaxe archæologist. The President afterwards referred to what has been done to preserve archæological memorials in foreign countries, and then spoke of the establishment of the museums at Salisbury and Devizes, which had been opened since the last meeting of the Society at Warminster. The conclusion of his address had reference to the preservation of national monuments, and he said in Wiltshire they had to lament the damage, if not destruction, of one of the most curious monuments in the world, that of Avebury, near Marlborough.

Sir John Lubbock proposed a vote of thanks to the Marquis of Bath for his address.

The Rev. Sir J. E. Philipps seconded the resolution, and said there were two reasons why they should take an interest in archæology. One was that it was one of the chief handmaids of history, and the other was that it tended to put down conceit. He thought the study of archæology one of the best correctives of conceit. They were apt to think of the progress of the nineteenth century, and so there was progress; but when they thought of the architecture, stained glass, sculpture, and painting of the past, they spoke not merely of modern progress, but of modern decline.

The resolution having been adopted,

The Rev. A. C. Smith read the report of the committee, which stated that there was a steady progress of the society in the increase of members on the books, which at present stood at 380. The committee urged that the museum account should be assisted; the natural history class had been added to, but the geological specimens were not so favourable as could be wished. Mr. Smith made some remarks on the subject of finance, saying that the society had lent its capital to the amount of more than 200*l*.

to the museum fund at Devizes, and it was necessary they should get back the amount so advanced.

The report having been adopted, and the officers re-elected,

Canon Jackson read a lengthy paper on "The Vale of Warminster."

In the evening there was a *conversazione* at the Town-hall, when papers were read on local archæological topics.

On the 23rd ult., the members and friends proceeded by Longbridge Deverell, Brixton Deverell, Monkton Deverell, and Kingston Deverell, arriving at Mere about noon. Then they visited Zeals House, and afterwards Stourhead, by permission of Sir H. Hoare, bart.; then by Maiden Bradley to Warminster. There was a *conversazione* in the Town-hall in the evening, when an address was given by the Rev. John Baron, on "The Study of Anglo-Saxon and its Value to the Archæologist," and a paper by Sir John Lubbock, bart., M.P., on "Some Observations on the Habits of Ants."

On the 24th, the society visited Longleat, by Prospect-hill, and then went by Horningsham to Shearwater, by Longbridge Deverell, Sutton Veny, and Tytherton, to Heytesbury, returning to Warminster in the evening.

SHROPSHIRE ARCHÆOLOGICAL SOCIETY.

THE inaugural excursion of the members of the Shropshire Archæological and Natural History Society was made on the 20th ult. Starting from Bridgnorth, the party were first driven, under the guidance of Mr. Hubert Smith, who acted as *cicerone* throughout the day, to Lavingstone's Hole, which penetrates the face of the cliff some yards beneath the South Castle walk. To the ordinary observer, Lavingstone's Hole appears nothing more than an artificial cave, burrowed in the red sandstone, for the convenience of the occupier of the adjoining land, who, in the present case, utilises it as a carpenter's workshop; but it is actually a specimen of the engineering skill of the soldiers of the Commonwealth. After entering the outside cave, a passage or burrow can be perceived near the roof, and this penetrates the cliff for a distance of twenty or thirty yards. The object of Cromwell's general (Lavingstone) in making this place was to undermine the castle, which had so successfully resisted the efforts of the besiegers, but on the 26th of April, 1646, Col. Howard, finding that this mine had been driven so close to the foundation of his stronghold, discreetly surrendered.

After a walk of a few yards, the party came to a commodious-looking Elizabethan house in the Cartway, which was, during the last century, the residence of the celebrated Bishop Percy. The building is now occupied by Mr. Crushton, smith. On an inner wall is the following inscription, plainly legible, over a doorway:—

"EXCEPT THE LORD BVILD THE OWSE,
THE LABOVRERS THEREOF AVAIL NOTHING.
ERECTED BY R. FOR* 1580."

It was stated that undoubtedly the "For*" in this inscription meant Richard Forester, because the building was called "Forester's Folly" by his brother burghers, from the great expense he incurred in building it. Mr. H. Smith read a few remarks about Bishop Percy's connexion with the house. Mr. W. A. Leighton also read a paper which he had prepared, on the "Star Hotel, at Shifnal," which showed Dr. Percy's connexion with the Pitt family. Another paper was read by Mr. Smith relating to the family of Bishop Percy.

After the reading of these papers the party inspected the house, and, repairing to their vehicles, crossed the Severn by the bridge, and proceeded towards the Hermitage Hill. A glance was just obtained of the Cann Hall as they drove rapidly by. On arriving above the cemetery, the party alighted to visit the Hermit's Cave and the curious rock-hewn cottages in its immediate neighbourhood. The latter are inhabited. The Hermit's Cave formerly served as a chapel, and Mr. Hubert Smith read a few extracts from a paper on the hermitage which he had prepared for the first annual volume of the Association. He proceeded to show that the tradition which asserts that this hermitage was established by Ethelwald, the brother of King Athelstan, in or about 924, has some foundation in fact.

Taking to the carriages again, the party drove over the site of the once magnificent Morfe Forest, to Quatford Church, which has been restored of late years. It is a Norman structure, the material used being a porous-looking but very hard stone. Mr. Hubert Smith pointed out the stone used in erecting the old building, and stated that similar material had been found and used in some of the churches in Rome, at Dursley in Gloucestershire, and other places. At the latter place there was one of the largest deposits in England, and it had been used in constructing a portion of Berkeley Castle. Near the church is the site of the castle, which was built by Earl Roger de Montgomery about the same time as the church. It now forms a shapeless mound surrounded by a deep moat, which was recently cleared by Mr. Smalman, who, some years ago, took therefrom 300 cartloads of rubbish. A few of the party, before leaving Quatford, just took a glance at this ruin, which is close to the banks of the Severn. The Chantry was the next place visited, and, by the permission of the occupier, Mr. J. Swinton Spooner, the party were enabled to inspect the walls.

Remounting the vehicles, a move was made for St. James's, the residence of Captain Colley, and formerly the site of a flourishing priory. This religious institution was one of those sequestrated by Henry VIII., and the manor and its privileges were afterwards granted to Sir John Perrott. The visitors viewed the exterior of the leper-house of the hospital, which was attached to the priory.

The party afterwards returned to Bridgnorth, and paid a few flying visits to the many objects of interests within the precincts of the town. The picturesque situation of the upper portion of the town, elevated far above the surrounding country, and affording views of magnificent scenery, was, of course, the theme of general admiration. The prominent and fine church of St. Leonard was the first visited. The church has recently been rebuilt. At the old-fashioned Town-hall the visitors were shown the ancient maces, the property of the borough. After ten visits were paid to St. Mary's Church and to one of the most striking features in Bridgnorth, viz., the leaning ruin of the keep of the old castle. It seems that, when Cromwell's troops took the castle, after a long siege, they determined to annihilate the stronghold, which had almost proved impregnable, and blasting operations were resorted to. The keep, however, defied their efforts. The ruins lean out of the perpendicular at an angle of nearly 27 degrees, and, but that it has so stood for generations, one would fear to approach except within a safe distance of it. The Castle-walk, the north gate, and the artificial mound near the station, commonly called Pampudding-hill, were also hurriedly glanced at before the party broke up.

THE RESTORATION OF STRASSBURG CATHEDRAL.

THE German Government spares no expense in obliterating the sad havoc wrought in the venerable edifice of the Cathedral of Strassburg by the celebrated bombardment of the days of August, 1870. The work of restoration, begun five years ago, continues with unabated energy, and the very numerous repairs necessary by those memorable events extend to all parts of this grand monument of Gothic architecture, from the lower buttresses to its highest pinnacle. Visitors to Strassburg will notice everywhere new oriels, turrets, and fillets, striking the eye at once by their reddish grey colour, and contrasting to some degree from the partly-decayed stonework of the cathedral. At the present moment (August) a flying scaffolding may be seen near the "Schnecken," which serves in the restoration of the destroyed parts on the north side of the building. A few weeks ago, a life-size Madonna with the Christ, under a richly-decorated canopy, was placed over the centre of the great portal, the heavy doors of which will also be replaced by new ones. By the side of it a statue of St. Peter will be placed on a pedestal, also under a baldachino. The fourteen statues of emperors and kings which are to keep company with Chlodwig, Dagobert, Rudolph of Hapsburg, and Louis XIV. have been completed, and are awaiting being placed in their assigned positions. They are, grouped in fours at the different façades, the following:—Pepin the Short, Charles the Great, Otto the Great, and Henry the Fowler; Henry II., Henry III., Philip of Swabia, and Frederick Barbarossa; Ludwig II., Frederick II., Charles Martell, and Lothaire II.; finally, Charles of Provence (Carolus Junior) and the Emperor Henry IV., all colossal equestrian statues, with the exception of the two last, who are on foot. Handsome frescoes are to decorate the choir and the transept of the cathedral; but they will not be completed for another four years. Until their completion, an ugly scaffolding will deface the interior of the church. The reconstruction of the crown of the dome has not yet been begun.

REMARKABLE PRESERVATION OF WOOD.

A REMARKABLE instance of long preservation of wood under favourable circumstances has just been brought to light at some new sewer works now being carried on at Berlin, where twelve well-preserved coffins have been discovered. The site is an old disused churchyard, in the neighbourhood of the Spittelmarkt, which was closed as long ago as 1620. The corpses, consequently, have rested in their shells at least 260 years. But notwithstanding this long period of burial in the ground, the coffins, as well as the bones they contain, are in an excellent state of preservation; even remnants of dress being found in some of the coffins. This remarkable fact has induced Professor Virchow to subject the remains to a critical examination. He intends to discover, if possible, the substance with which, he thinks, the wood of the coffins must have been impregnated, in order to protect it against the decomposing influences of the soil. The wood seems to be that of young oak. The boards are 1·18 in. thick, being thickly tarred both inside and out; there seems also to have been a layer of lime in the coffins. The wood has become so hard by process of time as to be hardly workable; the workmen repeatedly breaking their axes and saws in their efforts to cut it. The boards are kept together by large wrought-iron nails, differing in form very much from those now in general use for the purpose. They are 3·15 in. long, 0·16 in. broad, and 0·08 in. thick. On one of the broad sides they have a peculiar furrow running down the whole length, and probably serving to impart to the nail greater adhesiveness to the wood. Though, of course, the nails are much eaten into by rust, the core is still sound.

THE ASPHALTE WOOD PAVING IN FLEET STREET.

THERE are few metropolitan thoroughfares the paving of which has excited so much curiosity on the part of the public as that which has riveted attention in Fleet-street during the last five or six weeks. For that period this great artery between the foot of Ludgate-hill and Temple-bar has been in an essentially abnormal condition, and the stream of vehicular traffic for which it is famous has had to give place to hundreds of artisans, huge piles of timber blocks, cart-loads of concrete, formidable rolls of roofing felt, and last—and, perhaps, greatest punishment of all—seething caldrons of boiling tar, which, however it may have purified the atmosphere, and been an antidote to epidemics, has been by no means inviting to the olfactory organs, nor welcome to the residents and wayfarers. During all this time, likewise, vehicles of every description between the east and the west have been compelled to make the most tortuous detours, with no option but that of threading their way along the various narrow lanes which abound on either side of the great thoroughfare. It is satisfactory to know that the present week will see an end of this state of things, the paving operations now having reached Temple-bar, the point to which the City authorities have control, and for whom the paving has been carried out. The fact that the pavement is of two distinct kinds is pleaded as a reason why it has taken so long to effect; but there is a prevalent opinion that it might have been executed within a much shorter period if it had been proceeded with simultaneously. The Asphalte Wood Paving Company have carried out the work from the foot of Fleet-street to Bouverie-street, and Henson's Street Paving Company from Bouverie-street to Temple-bar, and people are asking why the last-named company were not allowed to proceed with their labours until the section between Ludgate-circus and Bouverie-street was finished. During the whole of the time the paving has been in progress the traffic from end to end has to all intents and purposes been stopped for about six weeks, when half the time might have served. With regard to the paving itself, it remains to be seen which will be the most effectual. Both systems involve

a strong concrete foundation, the difference in the upper portion of the work being that on the Asphalte Wood Company's system the wooden blocks forming the surface of the street rest upon a layer of asphalte above the concrete, whereas on Henson's principle the concrete foundation is overlaid with roofing felt, on which the wood rests, each row of blocks across the street being likewise interlaced with strips of felt with a free introduction of tar. It is urged in favour of this arrangement that the roofing felt will effectually keep the water out of the wood, and prevent it from rotting.

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The whole is surmounted by a handsome modillion and block cornice, with dormers in the roof above.

The spandrels between the arches which unite the Ionic columns and piers on the ground-floor are filled with carving in low relief by Mr. Anstey, representing the Arts, Commerce, &c., and he is also executing all the remaining carving. The windows of the ground and first floors are to be fitted with bronzed ornamental mullions, and the wrought-iron railings and guards are all to be of special design.

The architect is Mr. Thomas Chatfeild Clarke; and the builders are Messrs. Merritt & Ashby.

Petroleum.—The Romford Board of Health have now positively decided not to renew their contract with the local gas company for the supply of gas to light the public lamps. Tenders for the supply of petroleum are being solicited, and it is expected that, early in the present month, the new oil-lamps which the Board are providing will be ready for use.

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The style is Italian, designed in two orders, viz., Ionic and Corinthian, each order taking two floors.

The whole is surmounted by a handsome modillion and block cornice, with dormers in the roof above.

The spandrels between the arches which unite the Ionic columns and piers on the ground-floor are filled with carving in low relief by Mr. Anstey, representing the Arts, Commerce, &c., and he is also executing all the remaining carving. The windows of the ground and first floors are to be fitted with bronzed ornamental mullions, and the wrought-iron railings and guards are all to be of special design.

The architect is Mr. Thomas Chatfeild Clarke; and the builders are Messrs. Merritt & Ashby.

Petroleum.—The Romford Board of Health have now positively decided not to renew their contract with the local gas company for the supply of gas to light the public lamps. Tenders for the supply of petroleum are being solicited, and it is expected that, early in the present month, the new oil-lamps which the Board are providing will be ready for use.

ROYAL BANK OF SCOTLAND, BISHOPSGATE STREET WITHIN.—Mr. T. Chatfeild Clarke Architect.

THE BUILDER.

THE ALEXANDRA PALACE ESTATE AND THE FINANCIAL ASSOCIATION.

VALUE OF BUILDING LAND IN HORNSEY.

AT the half-yearly meeting of the Financial Association, held on the 24th ult., the Chairman made some interesting statements as to the value of building land in the neighbourhood of Hornsey, in connexion with the recent purchase of the Alexandra Palace and Park, and the Muswell-hill Estate. In the outset, he observed that the Palace property had been purchased for 408,000*l.*, and leased to Messrs. Bertram & Roberts for twenty-one years, the rent at the commencement being 20,000*l.* per annum, with an increase at the rate of 500*l.* a year, the ultimate annual rental being 30,000*l.* He next added that the Association had obtained a mortgage on the Palace for 250,000*l.* for seven years, at five per cent. interest, and under arrangements which had been entered into, the mortgagees would concur in any building leases granted by the Association, so that practically they could deal with the property as freely as if there were no mortgage upon it. Adverting to the portion of the estate available for building upon, he said that the Bill which had just passed through Parliament gave an addition of saleable property, apart from the palace and park, of seventy-five acres, and he stated that Mr. Ashdown, the surveyor and architect to the Conservative Land Society, placed the whole value of the building land at 310,000*l.*, estimating the land at 1,000*l.* an acre. He had had an offer to purchase ten or twenty acres at that price, but that amount was now considered too little, as at Crouch-hill and the neighbourhood land had lately been sold at 2,000*l.* an acre. There were several applications under consideration from people connected with the Palace, as the houses in its neighbourhood,—at Muswell-hill, Crouch-hill, and Wood-green,—had materially increased in value. The Chairman, in continuation, expressed great confidence in the future of the property, and remarked that in his judgment the shareholders would be able to make their choice as to which end of the estate they would have their capital back upon. He believed they might get the bulk of it back on the building land, or from the Palace. The building land had been taken at only 5*s.* per foot frontage, and land at Hornsey was selling at 15*s.* per foot frontage.

CHAPEL TO ST. JOHN'S FOUNDATION SCHOOL, LEATHERHEAD.

A NEW chapel has just been built to this school, from the designs of Mr. Benjamin Ferrey, F.S.A., and Mr. J. H. Good, joint architects. In plan the arrangement is that of a college chapel, the western bay divided off by a wood screen, which is approached by north and south doorways. The oak seats for the boys face north and south, and are raised one above another, with return stalls for the masters at the east side of the screen, and stalls for the clergy towards the easternmost end. The plan is a parallelogram, with hexagonal-angled apse. The total length is 83 ft., and the width 25 ft. 6 in. There is a handsome south porch to the western-most bay, and opposite this on the north side is another door, which is intended eventually to lead out into a covered cloister to connect the school and the chapel. On the south side, near the apse, is the vestry, with the organ-chamber over. The walls are lined internally with Corsham Down ashlar. The roofs are of pitch pine, and open-timbered, boarded behind the rafters except to the apse, where there is a panelled wood ceiling. Bold stone arches resting on carved caps with sculptured corbels carry the purlins, and perform that task instead of timber principals. Buttresses occur opposite these arches to resist the thrust. Externally the walls are faced with squared flints, the quoins and dressings being of Bath Box-ground stone. The roofs are covered with Broseley tiles. A lofty flèche, covered with lead and decorated with crockets and finials, occurs over the entrance to the chancel. Bold octagonal turrets flank the south gable to the organ-chamber, and in the upper part is a handsome pierced parapet and rose-window over. There is a large traceried four-light window at the west end of the chapel, the side windows being two-light ones. The altar is ascended to by several steps. The open spaces are paved with encaustic tiles, the eastern part being richer than the rest; there are bands of slate intermixed. The oak altar-rail is carried on ornamental wrought-iron standards. The apse windows are filled with painted glass, by Messrs. Heaton, Butler, & Bayne, while there is cathedral rolled glass in ornamental lead quarries to the remainder. The warming is managed by one of Porritt's underground stoves. Messrs. Goddard & Sons, of Farnham and Dorking, were the builders. The total cost is about 4,000*l.*

"INDIVIDUALISM" OR "GENERALISM."

SIR,—There is more involved in the question raised by "A Workman" in the *Builder* of Saturday, than is evident on its surface. The question in art, in education, and philosophy is between "individualism" and "generalism," if we may be allowed to coin and pass the latter term. "Individualism," physically and mentally, is a greater or less divergence from the central or typal form of body and of mind. The more extreme that divergence in the physique, the more odd, ungainly or ugly, is the man; and the greater the divergence from the balanced or typal form of intellect, the more peculiar, eccentric, or one-sided will be the mental "individualism" or characteristic; and, as a rule, the idiosyncracy or individuality of the "physique" will be an index of some mental "list"; and as oddity in physical form strikes the eye, so oddity or peculiarity in the mental constitution will strike and impose upon us by the exhibition of a certain native force. The question which the people of this country have to decide is, whether "individualism" or "generalism" is to be the national purpose in education and in art? In the earlier stages of civilisation and of art the more marked is the individuality; progress in both cases wears off the angularities or peculiarities of men, and of art-productions; polish means nothing more nor less than the wearing off the rude, rugged individualism of both,—than the attainment of a greater degree of symmetry, morally, mentally, and physically in men, and of that higher taste in art which leads to the grand style, which aims at the embodiment of fine ideas and of the beautiful. Hence the odd and the eccentric in art indicate an early stage of culture. Much in the Gothic is indicative of the comparative barbarity of the period; the art is the art of barbarians, or of children, if you please, very individual indeed, as the rude attempts of children and semi-barbarous peoples always are. But even early and rude attempts at art are not without a certain degree of unison, arising from a number of men of a similar mental calibre working to a common end. The Gothic is an example of "arrested development." A mental revolution stopped and aborted it in mid-career. We may infer from the superior forms which the Gothic ornamentation assumed in Northern Italy, where better art-workmanship was attainable than in other parts of Europe, that it would have elsewhere have been transformed in the course of time if it had continued to be the national style. But from Gothic individualities let us turn to proportioned, balanced Grecian art, in which individuality never obtrudes itself to the disturbance of the even tenor of the beauty of "generalism." Man's superiority in the scale of animated nature is due to his more generalised capacity. Other creatures are much more individual than he, and exhibit some particular faculty developed to excess. But man is most man when he betrays no marked individuality; he is then most in the likeness of the angels, and possesses a mastery which can grapple with anything. Repine not that you are less individual than your Gothic forefathers; thank God that you are. Do not be anxious to produce work which Phidias would have laughed at, nor listen to the cant of half-informed enthusiasts, but range yourself to take part in a new order of intelligence and of art, of a more advanced and better-instructed age.

METER.

Sir,—Your correspondent, "A Workman," in lamenting the lack of individualism on the part of art-workmen generally, omits to define clearly and perspicuously the kind and degree of individualism of which they are most deficient. This want of individualism is not confined to any particular branch of artistic culture, but will be found to pervade every phase of fine-art development, including architecture, painting, and literature. Individualism is of two kinds, whereby the works of particular authors are recognisable. The one is frequently to be found without the other; but the two rarely combined to a high degree of perfection. Individualism will produce either a mannerist or a genius, according to the nature of his artistic acquirements. The works of the mannerist are characterised by some strange peculiarity in the mechanical manipulation; whereas those of a genius are marked by powerful conceptive individuality. The mannerist is known by his mechanical or manipulative individualism, and the genius by his mental or intellectual individualism. The one is a machine; the other a profound thinker. As remarkable instances of mechanical individualism in great masters, I may cite Michelangelo and Doré. One of the chief characteristics of the former consists in the vigour, clearness, and almost-indelible nature of his outlines; whilst in the works of the latter outline is seldom or never used, the whole of his beautiful and illusive effects being conveyed by a subtle arrangement of light and shade. Leonardo da Vinci was also apparently unable to see *outline* in natural objects, and adopted the same method to give rotundity to his subject. Michelangelo and Leonardo both sought inspiration in the contemplation of Nature; but in a sense they beheld her with different eyes.

When great masters in art differ in their mode of seeing actual realities, it is not surprising to observe a greater divergence in their conceptions of the ideal. This is, no doubt, greatly influenced by the character and temperament of the individual artist. Michelangelo was grand and terrific in his idealism. Raffaelle's conception of ideal female beauty was the very quintessence of grace and loveliness, compared with which the female figures of even so great an artist as Titian are sensuous to a degree. There is the true stamp of individualism on the productions of all original workers. The works of Shakspeare, Milton, and Pope are easily distinguished by those familiar with their style, as are also those of Addison, Steele, and Johnson. The same may be said of many authors, artists, poets, and architects of the present day. There is an individualism discernible in the works of Scott, Street, Barry, and Burges, which is peculiarly characteristic of each.

I am not a sentimental antiquarian, ready to grumble at the art progress of to-day, and decry all that comes under the appellation "modern." I can look around and discover more individualism displayed in the nineteenth century than has been evolved during any previous century of the world's history with which we are acquainted. A greater exercise of "artistic individualism" on the part of our workmen is highly desirable,—although their individualism in many other matters is, alas! only too palpable,—yet seeing that the present system of artistic training is incompatible with individualism, it would be unreasonable to expect a high order of intellectual idealism.

The present method adopted in the majority of our art-schools is but a gigantic copying institution, smothering individualism, and producing a mighty army of plagiarists.

The "dull model" and printed copies may have their uses, but would it not be well if drawing-masters and art-teachers bore in mind the words of Pope?—

> "First follow Nature, and your judgment frame,
> By her just standard, which is still the same;
> Unerring Nature, still divinely bright,
> One clear, unchanged, and universal light,
> Life, force, and beauty must to all impart,
> At once the source, and end, and test of art."

Technical education does not foster individualism,—and in this sense it is a failure; it lays down a line of demarcation beyond which the student, for want of self-reliance, dare not, or cannot, wander. His imagination is tied down to *terra firma* by obnoxious plaster casts or printed copies of Greek gods and goddesses adorned with mythological helmets out of all proportion. Technical education may and does give the student ideas, but it cannot command intellect to apply them. It will teach a man to read and write, but it will not give him the essential individualism to produce a "Paradise Lost."

"Might not this be changed?" asks your correspondent. It can only be changed by instituting a system of artistic training that shall foster and encourage conceptive individualism; a system where green fields, rustic lanes, and shady woods shall supersede studios and picture-galleries,—where, in short, "dull models" shall be swept away, and give place to Nature in all her glory. When visiting our picture-galleries, you cannot fail to observe students striving, "might and main," to copy some old picture, and faithfully reproducing all its peculiarities, good or bad, without apparently for a moment

questioning the propriety of their action. A black, murky-looking tree, with unnatural colouring, owing in all probability to age, and stamped with the characteristics of a mannerist, is reproduced with great patience and no little manipulative skill. But what, I ask, avails all this outlay of patience, skill, canvas, and colour? When completed, the student has the doubtful satisfaction of having produced a picture devoid of all originality. Would not the same expenditure of talent in copying a natural object have been productive of more beneficial results? Ruskin says that an indifferent water-colour, if original, is preferable to the most elaborate engraving; and for the same reason an indifferent design, if original, is far more desirable than the most laboured reproduction of another man's work. Nature should be the first school of the art workman; the mechanical individualisms of his predecessor should be made a subsequent study. Precedence should be given to the works of God rather than those of man.

By first seeking inspiration from Nature the inventive faculties are early awakened; whereas in copying from existing works the student falls into a state of lethargic indifference, relying too much upon his predecessors, both for ideas and modes of manipulation. The most original geniuses have invariably worked at Nature's school, and hence their superiority, both in mental and mechanical individualism. The individualism mentioned by your correspondent as being possessed by the Mediæval art-workers was, in many instances, gross and sensuous, and little to be desired, as witness in some of their carvings. In mechanical individualism I doubt whether they were in advance of their modern successor, although they may have had the advantage in conceptive individualism.

Another thing required to promote individualism, is less fashionable fluctuation in art taste, and also art-workers who will not pander to such puerility. Let each art-workman strive after individualism, and stand firm to his own conceptions and principles, and not adopt those of another, because he sees his friendly rival enjoying the transitory pleasure of fashionable approval.

The man has yet to appear who shall clearly define the ethics of art, and still controversy for aye, by laying perspicuously before all art-workers what is moral and immoral in art, truthful or false. Until the true principles which govern artistic composition are thus definitely defined by some artistic genius, whose maxims shall be universally accepted, each art-workman must study Nature himself; not with another's eyes, for by this means alone will he become his own interpreter, and although he may not at all times succeed in being truthful, his errors and misconceptions will be his own, and he will at least have the gratification of knowing that he is pursuing the only course open to him for securing "artistic individualism."

James Geo. Buckle.

STATE MEDICINE AND THE GOVERNMENT.

The Joint Committee on State Medicine of the British Medical and Social Science Associations have prepared a memorial to the Earl of Beaconsfield, in which they express a belief in the urgent necessity of some further action on the part of the Legislature in or to protect the public health, and which they are persuaded can be largely advanced by so far remodelling the laws relating to government as to remove the distinctions which now exist in the powers and obligations vested in urban and rural sanitary authorities. These distinctions create many difficulties and much confusion in local administration, and it is notorious that many portions of rural districts are more strictly urban, both in character and population, than many outlying portions of urban districts, or even the districts themselves. They point out that the law which regulates streets and buildings is now mainly under the control of urban authorities, and any difference in the condition of rural districts in these respects, as contra-distinguished from cities and towns, could easily be met by the passing of bye-laws, always being capable of being altered and amended to meet the existing conditions of the district.

The breaking down of this distinction between urban and rural sanitary districts would secure simplicity in the law, and attain an object long and earnestly sought for by the memorialists—uniformity of public health enactments for every part of the kingdom.

The memorialists have been strongly impressed with the need of economy in carrying out sanitary improvements, and generally in the administration of the functions of local government, and they believe that a reconstruction of sanitary agency is consistent not only with complete efficiency, but with the accomplishment of a much larger amount of work done at a less cost than at present. This can readily be obtained by constituting, instead of the many local authorities under various names now existing, one elected and representative body, clothed with all executive functions, whether municipal or sanitary, within the area of its jurisdiction. An almost universal consensus of opinion has been arrived at that the establishment of a County Board for purposes alike and akin to those here indicated is an essential element in any scheme for ensuring local and sanitary progress.

An opportunity would be furnished for remodelling in the national interest the public health and medical service. By establishing a County Board for administration and finance, it would be possible to secure the services of health officers of high scientific attainments and of acknowledged ability, paid adequate salaries for superintending the whole or a division of a county, acting as consultants under the direction of a chief attached to a central authority, affording counsel and assistance to district officers in all cases of doubt or difficulty arising in the discharge of their duties, examining and acting on the weekly returns of disease and deaths furnished by district registrars; and also aiding courts of justice by acting as experts in all cases of criminal jurisprudence requiring medical evidence as to injuries causing or tending to cause death.

Without the aid of the medical attendant in giving, either directly or through the intervention of the householder, timely notice of the occurrence of zymotic disease and early intimation of death in all cases, the adoption of effective measures for preventing the spread of diseases of an infectious character becomes almost impossible.

By far the greatest help to an improved sanitary condition of the people must be expected from the progress of general knowledge and belief in the benefits to be obtained from an ample supply of pure air and pure water, and from a more assured conviction that these essentials to a healthy life may be secured by a moderate expenditure, which in the end will prove remunerative.

The Prime Minister was unable to find time to receive a deputation. The memorial was presented on the 18th of June.

The Joint Committee, more and more impressed with the necessity of urging forward the reforms set out in the resolutions of last year, and the memorial based on them, have determined by every means in their power to give the greatest possible publicity to their views, and they are not without hope that the question may be taken up in Parliament by leading politicians, and that the Government, who are already pledged to do something towards the formation of County Boards, may be induced seriously to consider the necessity of a radical change in sanitary administration.

CUMBERLAND AND WESTMORELAND ARCHÆOLOGICAL SOCIETY.

The summer meeting of this society was opened on the 16th ult. at Dalton, where the members met at eleven o'clock to go through an interesting excursion programme. Several wagonettes were in waiting at the station on the arrival of the members, who were at once conveyed to the old church at Dalton, where the ancient edifice was inspected with some interest, as was also the castle, where at one time the Abbot of Furness held his court.

Leaving Dalton Castle the party proceeded by way of Crooklands to Urswick, but before they reached the latter place they alighted, and, guided by Dr. Simpson, Mr. Fell, and Mr. Rigge, the local managing committee, left the highway by a passage on the right, and ultimately reached an uneven field where are to be seen the remains of what is considered to be an ancient British encampment. Mr. Fell introduced this subject by remarking that there was every indication from the stones and the foundations which were to be found in the field that this had been the site of an Ancient British encampment. He read an extract from Close's edition of West's "Antiquities of Furness," from which it appeared that these were the remains of foundations of the walls of an angular inclosure, three of its sides measuring sixty-seven yards each, and the fourth fifty-two. Two openings or gates appeared to be on the side opposite the village. In the same inclosure were the remains of a wall surrounding a circular plot of land, ninety-four or ninety-five yards in diameter, which seemed to have been divided into interior walls of less strength, the outer walls being 9 ft. or 10 ft. in thickness, and formed without mortar. The circumference of the circle measured thirty yards, but the encircled plot was not accurately round. These enclosures were known by the name of "stone walls," but no tradition remained concerning their intention, nor had anything been discovered which would throw any light on their origin. The size of the circle was nearly the same as that at Mayburgh, in Cumberland, the intention of which has never been settled by antiquaries. This did not give any appearance of having been a castle or the seat of the ancient family of the name of Urswick. The following particulars given by an old inhabitant of Urswick, who himself worked upwards of thirty years ago at the process of destruction, may not be an uninteresting record of the condition of the "Stone Walls." The country around them at this time was a mixture of open pasture and unfenced coppice. The latter was fenced about thirty years ago to improve it, and the ancient "Stone Walls" supplied material, so far as it was handy, and could be got without trouble. In all the fences round this ancient inclosure the stones which formed it were indiscriminately placed, so that all trace of them was lost. Thirty years ago the walls of the inclosure were well and clearly defined, standing up above the ground on the average 2 ft. high; it was rough walled, without mortar, with various-sized stones. The inner circle of that time had a surrounding of upright stones almost perfect, with apparently space for two entrances, which can now be traced. The stones composing the circle were not large, none of them exceeding 4 ft. above the ground. They were thin upright slabs of limestone, which showed no trace of having been quarried. All these stones were removed for the adjacent wall fences. Mr. Fell also referred to the remarks upon these stone walls made by Mr. Barber in a paper written by him under the title of "The Pre-historic Remains of Furness and Cartmel," and in which the author, after describing the position, measurement, and general plan of the place, gave the idea that, had not the greater bulk of the stones in this inclosure been removed, they would probably have been able to identify the work as that of an ancient British camp or hut circle. The circular plan of the defences, the traces of foundations of semicircular walls, inside the outer barrier the walled way leading to the inner circles, the *prætorium* of the chief, and the elevated situation of the whole, warranted them in assuming that this record of antiquity was essentially British.

Dr. Simpson agreed with the remarks made by Mr. Fell, and compared the circle with those at Barton Fell and at Mayburgh, the inside of both of which were perfectly level, but that at Urswick was not; and at the two circles he had named, large stones had been found inside, which was not the case with the one they were inspecting that day. He was strongly of opinion that this had been a place of British residence. The diameter of the inner circle was measured to be 25 ft.

At Urswick Church, the chief object of interest was a figure cut in red sandstone, which occupies a prominent position in the outer wall of the tower, and which is supposed to represent the Virgin supporting the dead body of Christ. Although the figure from the yard of the church presents a somewhat unfinished appearance, on close examination it was found that it was not rudely cut, and that the subject, considering its age, had been fairly treated.

After a four miles' drive, by way of Little Urswick and Scales, Aldingham was reached, and the little church there was inspected. The Norman pillars and arches on the south of the church were greatly admired.

Arriving at Moat Farm, the party partook of lunch, and Mr. Fell read a description of Aldingham moat from West's "Antiquities." Dr. Barber, writing on this subject, said: "The Moat Hill, or more properly the Folk-mote Hill (from the Saxon, signifying a place of public assembly), is an artificial hill of considerable height, being 96 ft. above the sea level, and has been considered by different writers to be of Druidical

origin; an exploratory mound from which to view the coasts and Bay of Morecambe; a beacon hill, whence alarm could be given or received of any shipping on its first appearance in the bay; a mote hill for the Saxon lord of Aldingham. The mound is a plain earthwork, covered with grass, originally resembling the frustrum of a cone, but now of an irregular shape, from the action of the tide on the side facing the sea. It is surrounded by a deep ditch, 20 ft. wide, from which most of the material for its construction is derived."

The party left the mount, regained their carriages, and proceeded by way of Colt Park to Gleaston.

On arriving at Gleaston Castle, the ancient seat of the Flemings, Dr. Simpson said that as far as he could judge, the Castle was of comparatively late date, for it had not grown like most other castles from a peel tower in the middle, and subsequently expanded itself, but it had evidently been built at one time, and a further evidence that it was of later origin than most places was to be seen in the fact that more arrangements had been made for the comfort of the inmates of the house than was generally to be found. The living apartments were at the south-east corner, the buttery, fireplaces, and windows, &c. leading to this idea. He did not know from what the name was derived, but he believed it was called after the village.

Mr. Ferguson expressed the opinion that the castle was built in the time of the Edwards.

The day's excursion terminated by a drive to Furness Abbey, through Leece and Roose. Dr. Simpson explained that it had been considered useless on the part of anybody to write a paper on the abbey, inasmuch as it had been treated in so able and so exhaustive a manner by the late Mr. Edmund Sharpe, of Lancaster.

Mr. Ferguson read several extracts from Mr. Sharpe's paper, and accompanied the party through the ruins, pointing out the nave, transepts, choir, private chapels, cloisters, chapter-house, and other places of interest. He said this was one of the finest Cistercian abbeys which they had left to them. It had been ascertained that Cistercian abbeys were built, generally speaking, on one and the same plan. The church ran east and west, while the fratry, the refectory, and the *domus conversorum* ran parallel to each other, north and south. The chapter-house was perhaps the finest specimen extant of this kind of place in the country. The fratry immediately to the south of the chapter-house was originally open at one end. In this place the monks spent their time. Over it were their dormitories. The *domus conversorum* was on the opposite side of the cloisters, and in this place the *conversi*, or servants, or workmen lived and performed their daily work. Over this was their dormitory, and the superintendent had a special room in this department named the *magister conversorum*. These *conversi* generally consisted of the scum of society, for when they could not get work anywhere they could get into these abbeys, but strict watch was kept over them, and they were made to work. The refectory, or dining-hall, of which the foundations were still left, ran parallel with the fratry at the south side of the cloisters. The party inspected the different ages of architecture which are observable to the practical eye in various parts of the ruins, and ultimately reached the prior's chapel in the south, where the Rev. T. Lees, of Wreay, read an interesting paper on "The probable use of certain stones found in the ruins of Calder and Furness."

During the evening papers were read by Mr. Elwood, on "Sheep-scoring Marks"; by Mr. Lees, on "A Monk at Furness"; and by Mr. Ferguson, in reply to Mr. Nicholson's paper, read at the Gilsland meeting on Norman stations. This closed the first day's business.

On the 17th ult. the members assembled at Furness Abbey at nine o'clock in the morning, and proceeded to Barrow, under the guidance of Mr. J. Fell, who conducted them along the docks, through the Iron and Steel Works, Flax and Jute Mills, and other places of industrial interest in the town. At half-past eleven o'clock the members took the train to Ros Island, and then crossed the channel in boats to Piel Island. Arrived here the party walked to the old Castle, and, after a brief examination of the buildings, assembled in the outer court, where Major Harrison read an interesting paper on the ruins. A cordial vote of thanks was accorded to the Duke of Buccleuch for the great interest he had taken in the preservation of the ruin, and the great liberality he had displayed in its restoration. The chief staircase has been completely restored in stonework, and the top of the walls of the castle can now be reached by a circular staircase, instead of, as was the case a few months ago, by a wooden ladder.

The winter meeting will be held at Whitehaven in December.

ARTISANS' DWELLINGS ON GOLDSMITH'S GARDEN.

THERE blocks of buildings have just been erected on a portion of the garden attached to the house in which the poet Goldsmith resided for some years at Peckham. The buildings have been erected by the Sanitary Dwellings Company, and are named the "Goldsmith Residences." They are intended for the respectable artisan class, as well as clerks and others engaged in mercantile pursuits. The buildings are three stories in height, containing the ground and two upper floors. They have two main frontages, uniform with each other. The elevations are 50 ft. in height, one to the east facing Goldsmith-road, and the other to the west, overlooking the remaining portion of the garden, which is intended to be laid out as a recreation ground for the use of the tenants. The extreme depth of the buildings from the Goldsmith-road elevation to the west frontage, is 80 ft., the three blocks covering a ground area of about 4,000 superficial feet. Each block contains twelve tenements, exactly alike as to the number of apartments, general accommodation, and fittings, the only difference being that the ground-floor tenements have small yards at the rear. Each tenement has four apartments, consisting of spacious and comfortably fitted parlour and kitchen, with white veined marble chimney mantels, together with two bed-rooms, scullery, fitted with copper for washing purposes, and a water-closet to each tenement. Access is obtained to the several tenements along a corridor on each floor of the three blocks extending from the Goldsmith-road frontage to the west elevation leading to the intended recreation-grounds, and there are dust-shoots fixed in all these several corridors for the use of the tenants. In erecting the buildings the ventilation of the several tenements has not been neglected. Above the windows on the several floors, both in the Goldsmith-road and the west frontage, there are perforated zinc ventilation openings, with air-bricks and flues in front of the elevations. Externally the buildings present a neat and ornamental appearance, the ground and first floors of both elevations having bay windows fitted with green Venetian blinds, whilst the upper floor has casement windows. The materials are stock brick, and in front of the Goldsmith-road frontage there are areas enclosed with ornamental iron railing. The tenements are now almost ready for occupation, and there is a very large demand for them on the part of well-to-do artisans amongst others. The rents of the tenements on the ground and first floors are 6s. and 6s. 3d. per week, and the second floor 5s. 6d. and 5s. 9d. per week, including all taxes. From the upper floors of the Goldsmith-road frontage there is a commanding and extensive view of the district for several miles around, including the neighbourhood of Greenwich, the shipping in the Surrey Commercial Docks, and other parts of the Thames.

The buildings have been erected from the designs of Mr. Banister Fletcher, architect; the contractors being Messrs. Bayes, Brothers, & Allen, of the Charlton Works, Islington. Mr. Alfred George is foreman of the works.

INDUSTRIAL DWELLINGS COMPANIES.

London. — The twenty-eighth half-yearly general meeting of the Industrial Dwellings Company has been held, under the presidency of the chairman, Sir S. H. Waterlow, M.P. The report of the directors was taken as read. The Chairman, in moving its adoption, congratulated the shareholders on the financial position of the company and the condition of the property. The dividend recommended,—viz., 5 per cent. per annum,—had been fairly and more than earned by the rentals received by the company. They might also congratulate themselves that during the half-year they had spent more money than in any preceding half-year of the existence of the company. The capital of the company now consisted of 455,673*l.*, and they had spent during the past half-year 30,366*l.*, and the income for the half-year had been 19,365*l.*; the total expenditure had amounted to 11,768*l.*, leaving a balance of 8,721*l.*, which included a sum of 644*l.* repaid to the Public Works Loan Commissioners on account of principal. The accounts would have shown 1 per cent. more earnings, but the company had always charged interest on unproductive capital to revenue, and during the past half-year that had amounted to 1,500*l.* The gross receipts from rent had been 19,465*l.*, or 532*l.* more than in the corresponding half of the previous year. The loss by empties and defaulters had only been 12*l.* 12*s.* 3*d.*, but against that they had 22*l.* on hand in deposit. The expenses of management had only been 563*l.* for salaries, and 229*l.* for office rent, printing, &c. That sum was a fraction under 4 per cent. of the income. The company were engaged in covering two large estates,—one at Chelsea and the other at Highbury,—with artisans' and labourers' dwellings. In the block recently opened in Goswell-road, the whole of the tenements were let, and nearly all the shops had been let at good rentals. The death-rate in the company's dwellings had been 16·5 per thousand, as against 22·3 in the metropolis generally.

Newcastle-on-Tyne.—The report of the directors of the Newcastle-on-Tyne Improved Industrial Dwellings Company, presented at the annual meeting, recommended that a dividend of 5 per cent. should be declared on the paid-up capital of the company. It is proposed to extend the operations of the company by the erection of additional buildings. The report of the company's resident agent, Mr. John Price, says:—

"The company's present experimental block, consisting of forty-four dwellings, and averaging 160 inhabitants, is on too small a scale to justify any near comparison on sanitary and kindred subjects between it and buildings of greater pretensions, though accurate statistics are carefully kept. Should the proposed extensions be carried out in their entirety, I have no doubt but that the results then exhibited will demonstrate still more clearly the value of such dwellings to the community. The total gross rental of the present block is 474*l.* 1*s.* 4*d.*, and it is satisfactory to observe that, after allowing for unavoidable contingencies, the rents received reached within a moiety of the full amount."

PLANTING OF TREES IN THE CAMBERWELL THOROUGHFARES.

THE Camberwell Vestry seem at present inclined liberally to carry out the boulevard system within their district, which has already been adopted in Newington, the Borough-road, and other parts of South London. At the meeting of the Vestry last week, the General Purposes Committee recommended that 388 trees be planted in the public footpath on the west side of the Old Kent-road; 24 trees on the west side of Camberwell-road, extending from near Camberwell-green to Wyndham-road; 86 trees on both sides of Camberwell New-road, within the parish boundaries; and 60 trees on the south side of the Peckham High-road; the total number of trees proposed to be planted in the thoroughfares within the parish being about 560. Mr. Hunt, a member of the Vestry, objected to that part of the recommendation referring to the largest number of trees proposed to be planted, contending that the Old Kent-road was not a fit place in which to plant trees, but several other members considered that the work would be a great improvement, as well as healthy and ornamental, and the recommendation of the committee was unanimously adopted. The Vestry likewise approved a recommendation of the same committee to plant an alternate line of trees along a portion of the centre of Peckham-rye, together with the placing of seats, and that circular seats be also placed around certain trees named on the common.

THE SALISBURY CHAPEL AT CHRISTCHURCH PRIORY.

THE Consistorial Court, presided over by Mr. Sumner, the chancellor of the diocese, has recently held an inquisition on an application by the Right Hon. the Earl of Malmesbury for a faculty to erect in the Salisbury Chapel of Christchurch Priory a recumbent effigy of his late Countess. The chantry was founded by Margaret, Countess of Salisbury, as the place for her burial and that of her son, Cardinal Pole, and was intended also as a place of prayer for the repose of their souls. In the course of the evidence which was given,

Mr. J. H. Clutton, architect, gave an account of the chantry, and, from his knowledge of it and other chantries and their uses, he was able to say that this particularly beautiful one was of

the work of the end of the fifteenth century; its dimensions were nearly 7 ft. wide and 12 ft. long. The monument was intended to stand in a recess at the west end of the interior, and the altar faced it. The door from the north aisle was made of dimensions to admit an officiating priest with chalice and paten, and any intrusion of a modern monument would destroy the chapel as an ancient memorial. The greater part of it was in the north aisle and not in the chancel.

The Chancellor of the Diocese, in giving judgment, said the decision he had arrived at was that Lord Malmesbury was not the owner of the chancel at all, and perhaps this decision might lead him to review his liabilities which the parish had reaped the benefit of. He did not stand in the position of lay rector or impropriator. But it did not follow necessarily because of this that he was not entitled to the faculty solicited, which was opposed on two grounds. Lord Loudoun claimed the freehold of the Salisbury Chapel, and Mr. Argyle opposed the faculty on the ground of good taste. Erected in the fifteenth century for the reception of the remains of Margaret Plantagenet, without doubt it was a monumental chapel, and it would be presumptuous in him, after hearing Mr. Clutton and Mr. Ferrey, to decide it was not a memorial chapel. Its character was not destroyed by becoming from the force of circumstances a cenotaph. He, therefore, decided that the chapel was a memorial and monument of the Countess of Salisbury. Then came the question should he grant the faculty to insert in the monument that of another lady. It would be wrong to put a monument over another. It would be a solecism in architectural taste, a breach of good taste in thus effacing an ancient monument, and he refused the faculty, leaving each party to pay their own costs.

BLAKEMERE CHURCH, HEREFORDSHIRE.

This church, which has just been rebuilt, was consecrated on the 16th ult. by the Bishop of Hereford. It consists of nave, chancel, and porch. The old windows, quoins, Norman doorway, and everything which could be used in again has been, so that the church looks like a restored rather than a new one. Mr. George Truefitt was the architect, and Mr. Welsh, of Hereford, the builder.

Blakemere is eleven miles west of Hereford, on the Hereford and Hay road. The old church of St. Leonard was, only six months ago, a very dilapidated stone building, consisting of nave, chancel, porch, and tower. The register dates from the year 1600. Twenty-five years ago the church was in a fit state to be pulled down; the walls were dreadfully out of the upright, the roof had sagged, the plastering was rotten with damp, the stonework was mildewed, the flooring decayed and damp, and all in a dilapidated condition. How it held together till lately is a mystery. Still there were points of interest in the old building. The nave was built in the time of the Normans, the chancel rather later; the old Norman doorway remained, together with two windows of the same date. The chancel arch—a remarkably small one—was semi-Norman; and what with the old font, and windows of later date, there were points to be admired by architect or antiquary. The church as rebuilt is rather smaller than before, but the original design has been adhered to as far as possible. All the old Norman and other work has been re-used; every old stone of quoins, windows, &c., has been re-set without being re-dressed; and the old chancel arch has been rebuilt. The east windows—three very small lancets—are just as before. The font has a new base. The old altar-table is as it was, and the old rails are still there. No plastering has been used on the walls, and the stonework shows itself.

DESERVING REWARD.

Some repairs being in progress to the roof of a house in High-street, Barnstaple, by Mr. Stocker, builder, a ladder, 50 ft. long, was reared from the roadway. A mason's labourer, named Charles Jones, when nearly at the top of the ladder, but not sufficiently so to deposit a heavy load of mortar on the roof, was observed by George Cross, the mason, who was waiting to take the load from him, to suddenly stop and to be in a fainting condition. Cross immediately went down the ladder, and removed the load from the fainting man's shoulder on to the roof. He then descended to the assistance of Jones, whom he found in a fit ready to fall, but this he happily prevented by getting across him, and holding him tightly by hand and leg. Jones, in his fit, fixed his teeth in Cross's arm, and trembled violently as well as struggled to get free. For fifteen minutes the people below witnessed the struggle afraid to ascend, until another brave fellow, named William Richards, a driver of a van, ran up the ladder to the assistance of the mason. In the mean time the fire-escape ladder was brought to the spot, and in the nick of time the police ascended, and the leather-belt belonging to the escape being fastened round Jones, he was lowered, still in the fit, to the ground unhurt.

The mason, Cross, was much exhausted, and when he regained the ground fainted. His bravery and resolution well deserve recognition.

THE HORN, SEAL, AND SILVER OAR OF DOVER.

At the last quarterly meeting of the Dover Town Council, Mr. Edward Knocker, F.S.A., the hon. librarian to the Corporation, presented a report in which he said:—

By permission of the Mayor, I have exhibited your ancient horn, seal, and small silver oar, at a meeting of the Fellows of the Society of Antiquaries; and I have much pleasure in communicating to you the results of my own investigation, and what I have gathered upon the subject of them.

The horn, which is richly chased, measured in a perpendicular line is of the length of 3 ft., and the diameter of the mouth is about 5 in. In a band encircling it, at a distance of 4 in. from the mouth, is the following inscription, viz., "A G L A Johannes." And in a scroll starting from the band, and, I assume, a continuation of it, is the following, viz., "De Alemaine Me Fecit." Now the first four letters, A G L A, represent the most potent of all exorcisms, compounded of the initials of the Hebrew Atha Gebir Leilam Adonipi (Thou art mighty for ever, O Lord). Mottoes so composed are of very great antiquity. Any one desirous of further investigating such ancient talismans or amulets will find a paper upon them in the *Archæological Journal*, vol. xxvi., p. 229. The remainder of the inscriptions may be read "Johannes de Alemaine me fecit" (John of Germany made me).

Mr. Franks states that the date of this horn is to be assigned to the thirteenth century, and, if manufactured in Germany, to the early part of it, or, if made in England, to the middle of the century, so that it may be attributed to the reign of King Henry III. In other boroughs where ancient horns exist they are sometimes called wakesmen's horns, from the custom, it is supposed, of having been used to wake the inhabitants in the morning. And Waterspoon's "Memorials of Horns" carries them back to early Saxon times, and says they were called waking-horns.

The large Common Seal of the Barons of Dover (commonly known as the Corporate seal) has a date upon the back of one division of it. The letters have been partially defaced by pressure, and I felt I might possibly be in error in reading it A.D. 1305. Mr. Franks assures me, however, there is no doubt of this being the correct date. It is, therefore, to be assigned to the latter period of the reign of King Edward I.

As to the silver oar, the brass case in which it is enclosed is probably of earlier date, but the present oar itself has the hall-mark of the reign of King George III.

Future investigation may determine whether the oar was renewed in that reign, for it must be assumed, I think, that this badge of office had relation to the grant of the office of Water Bailiff made by the Charter of Queen Anne to the Corporation.

SURVEYORSHIP ITEMS.

Ashford.—A special meeting of the Ashford Local Board was held on the 13th ult., to select candidates from the reduced list of applicants made by the roads and drainage committees for the office of surveyor and inspector of nuisances. The original number of applicants was fifty-nine. The committee reduced the number in the first instance to sixteen, and afterwards to eight, and the applications and testimonials of these eight were now submitted to the Board to choose from. The Board decided to invite Thomas Buckham, Wandsworth, civil engineer, aged thirty-eight; Charles Daswell, aged forty-six, Frome, road surveyor and inspector of nuisances; J. H. Dukinfield, Rochdale, aged thirty-two, surveyor to the Local Authority; and James Symons, of Redhill, road and drainage contractor, to attend a special meeting, when Mr. Daswell was elected.

Bridport.—At a meeting of the Bridport Local Board, on the 17th ult., it was stated that there were thirty-six applicants for the office of surveyor, and that the sanitary committee, to whom the matter had been referred, had selected four for the Board's consideration. Applications and testimonials were then read from Messrs. J. H. Dukinfield, of Rochdale; Sam Hodgkinson, of East Oldbury, Birmingham; C. Heeton, of Barnslem; and F. Cooper, of Allington. Mr. Cooper was unanimously elected, at a salary of 120*l.* per year, subject to three months' notice on either side.

Poplar.—Mr. Donaldson, deputy coroner for Middlesex, held an inquest, on the 26th ult., respecting the death of Mr. Isaac Williamson, aged sixty-six, surveyor to the Poplar Board of Works, and residing at 8, Landseer-road, Bow. The evidence of Mrs. Williamson proved that, in company with deceased, her husband, they had been on a visit at Berkhampstead, and were returning home by the London and North-Western Railway, on the night of the 20th ult. On arriving at Willesden Junction, they had occasion to change into a North London train. Deceased was in the act of getting out first, when the train moved on, and deceased fell on to the platform, blood flowing from his forehead. Deceased so far recovered that she was enabled to get him home, and a doctor was sent for. Dr. Todd said deceased was unconscious, and remained so until death. He could not tell the cause without a *post mortem* examination, and the inquiry was adjourned for that purpose.

LIABILITIES OF SEWER AUTHORITIES.

BARBER *v.* THE MAYOR AND CORPORATION OF LEICESTER.

This action was tried at the Leicestershire Summer Assizes, and was brought against the Corporation of Leicester, as the local sewer authority for the borough, for damage done to the cellars of the plaintiff, through the sewers being so negligently built as to be a nuisance and prejudicial to health, and through the defendants neglecting to repair and cleanse the sewer.

The plaintiff carried on the business of brewer and publican at the Foresters' Arms, Frog Island, Leicester. Frog Island is a low-lying part of the town between the river Soar and the canal. The water in the canal above the lock is some inches above the level of Slater-street, and the plaintiff's cellars are considerably below the water-level. During the heavy rains in July, 1875, the river overflowed, and a large amount of surface-water was poured into the sewers and drains in Frog Island. The same thing occurred several times in the course of 1876 and the beginning of this year. The plaintiff's cellars were frequently filled with water, sometimes mixed with sewage matter, causing considerable injury.

For the plaintiff it was contended that the inconvenience was the result of the inefficient system of drainage adopted by the Corporation; that the pumping apparatus was insufficient to meet the requirements of the district in rainy weather; and that the Corporation had negligently allowed the sewers to become choked, so that the sewage-water was headed back into the plaintiff's drains, from which it reached her cellars.

For the defendants, on the contrary, it was asserted there had been no negligence, but that the mischief had been principally the result of immoderate rains, "amounting," as the statement of defendants alleged, to "the act of God." As to the mixture of sewage, it was shown that occasionally the sewers were choked by wool waste improperly thrown into the drains of the manufactories, and thence getting into the sewers, where it formed a plug and stopped the flow of water. In such case, it was alleged, the obstruction was found and removed as soon as possible, and the damage to the plaintiff was unavoidable on the part of the defendants, and resulted partly from the defective nature of the defendants' drains and cellar.

The Judge directed the jury that there was no evidence of faulty construction of the sewers, and that the corporation was not answerable for the result of the floods; but the question for them was, whether the damage to the plaintiff's cellar had been caused by the negligence of the defendants in not properly cleansing and repairing their sewers, according to the provisions of the Public Health Act, under which they were bound to take proper means and use reasonable care.

The jury returned a verdict for the plaintiff—damages, 150*l.*

THE OBELISK.

Sir,—Following up a short letter you did me the favour to insert, I have noted with pleasure your remarks on the position of the expected obelisk. It should neither be depressed by surrounding buildings, nor by the area of the ground on which it stands.

The British Museum would, in this respect, and in point of association, be good, but the locality is less so.

What I would at present chiefly allude to is the apparent determination to place the obelisk on a pedestal.

The eye soon gets accustomed to anything, and I therefore trust something may be said in this respect before it is too late.

If necessary, the ground might be thrown up, or a flight of steps would be less objectionable than a pedestal; but the obelisk should be left as it is, and was intended to be,—an Egyptian monolith.

G.

Building Trade Activity in Liverpool.—At the weekly meeting of the Liverpool Health Committee on the 23rd ult., plans for the building of as large a number as 129 houses came before the committee for approval; building operations being, as it was stated, going on with particular activity in Liverpool just now.

LADY STUDENTS IN ROME.

It is proposed to establish in Rome a school for young lady artists proceeding to Rome for the purpose of completing their artistic education in that city. The difficulties and the dangers besetting young artists, and more particularly young women, in such a life as that at Rome are too well known to need statement.

The *pension* proposed will be based on strictly commercial and self-supporting principles; but for its earlier stages of development will require the assistance of persons interested in the objects sought to be attained by its establishment. A considerable portion of the sum needed has been already subscribed. Miss Mayor, of 8, Gayton-crescent, Hampstead, would answer any questions that might occur. The house selected for the Art School is situated in the Via degli Artisti (No. 38), near the Via Sistina, in one of the healthiest and best parts of Rome, and is capable of receiving twenty students.

NEW CLERGY-HOUSES.

Filton.—A new parsonage-house has been erected in connexion with St. Katharine's Church, Filton, Winford. It has been built of the local stone, with Bath stone dressings, in the Late Gothic style, from designs by Messrs. Harwood & Barnes, architects, Bristol. The contractor was Mr. Veale, and the cost has been about 1,800*l.*

Wick.—An additional wing has been added to the parish manse of Wick. The architect is Mr. Brims; mason, Mr. Charleson, Ackergill; joiner, Mr. John Swanson, Wick; and plumber, Mr. B. Dunbar. The cost has been about 1 200*l.*

Eton.—A new vicarage-house is about to be erected in Eton. The site, given by the College, is on the west side of High-street, adjoining South Meadow. The architect is Mr. B. Ferrey, who also designed Eton parish church. The builders are Messrs. Fassnidge, of Uxbridge, the amount of whose contract is 2,665*l.*, but the total cost is expected to be nearly 3,200*l.*

West Cowes.—A new vicarage-house for St. Mary's, West Cowes, is in course of erection. Red Fareham bricks, set in selenitic mortar, will be used for facing, the walls being hollow, tied with vitrified bonding bricks. Swanage stone is used for the heads and cills of windows, and for steps, &c., Box-ground stone being used for the porch. The roofs will be covered with Welsh slates. The contract was signed in February last, the amount being about 3,500*l.* The works are being carried out by Mr. J. Ball.

NEW REREDOSES.

Northampton.—An addition has just been made to the parish church of St. Edmund, Northampton. It consists of a reredos, erected at the cost of Mrs. Franklin, in memory of the late Mr. Franklin and Mrs. Franklin's sister. The reredos, which was designed by Messrs. Carpenter & Ingelow, architects, of London, is of alabaster, of different shades, and the architects' drawings have been well carried out by Mr. G. Hill, of Chelsea. In the centre of the reredos is a sculptured representation of Our Lord in majesty. The figure, which is in somewhat high relief, is shown seated within a vesica under an arched and crocketed gable. The head is crowned, the left hand holds the orb, and the right hand is raised in benediction. Immediately below this figure, in two quatrefoil panels, are placed the Alpha and Omega, surrounded with foliage. The sides are occupied by the sculptured Apocalyptic symbols of the four evangelists in foliated panels, and at each end is an open canopy surmounted by a carved pinnacle, under which stand the figures of Moses and John the Baptist, representing the old and new dispensations.

Brockdish.—A new reredos, composed of Minton's encaustic tiles, has lately been added to Brockdish Church. It is divided into panels; the two side ones being of floral design, enriched with gilt, of dark blue, bright blue, chocolate, and gold. The design is of a purely conventional character, and is intended to represent birds and foliage. Immediately above the table are small panels, representing Alpha and Omega, the four evangelists, and the *Agnus Dei*. There are also minor ones intended to represent eucharistic emblems. The new communion-rails are of carved oak. These, together with the piscina, are the work of local tradesmen, the first-mentioned being supplied by Mr. Wells, stonemason, of Dickleburg, and the latter by Mr. Godbold, of Harleston.

Long Melford.—The new reredos for the notable parish church of Long Melford was recently dedicated. It is of Caen stone, and consists of one large centre panel, representing the Saviour upon the cross, in the act of committing the care of his mother to St. John. At the foot of the cross kneels Mary Magdalene, while the Virgin Mary herself is being carefully tended by Mary, the wife of Cleophas, who stands behind her. The panel is designed partly from a well-known picture by Albert Dürer, and partly from other representations. The whole is surmounted by a rich canopy of carved fret-work. On either side of the reredos, each under a separate canopy, are the figures of the four Evangelists. The whole has been designed and executed by Messrs. Farmer & Brindley. The reredos is the sole gift of Mrs. Martyn, of Cheltenham, mother of the present Rector of Long Melford, and the total cost amounts to about 800*l.* The flooring of the chancel has also been relaid with encaustic tiles, by Messrs. Minton. The altar-rails, which are the gift of Sir William Parker, bart., were designed and executed by Messrs. Hart, Son, Peard, & Co.

THE CAMPDEN RESERVOIR, KENSINGTON.

SIR,—My attention has just been drawn to a paragraph in your paper of the 18th ult. respecting the above reservoir, which belongs to this company. I beg to say your correspondent is in error in alleging that the reservoir is "in a dangerous state, and leaking fearfully"; on the contrary, it is perfectly water-tight, having been recently re-lined with Portland cement in a most substantial manner, and is in every way in a very sound condition. It is capable of holding 17,000 tons of water, not millions, as stated. The walls and embankments are also thoroughly sound, and the construction of the reservoir, which is built with internal slopes of 2½ to 1, has a tendency to further strengthen the embankment.

It is true that a committee of the Kensington Vestry has been appointed to inspect the reservoir, but this is owing entirely to a dispute which has arisen with respect to some proposed drainage works on the adjoining land, and I have no doubt the report of the committee will fully confirm what I have said as to its safety.

There is no necessity, therefore, for any alarm in the neighbourhood, which the statement of your correspondent, if uncontradicted, is liable to cause, and I shall be glad if you will insert this letter in your next issue.

GEO. B. HALL,
Assistant-Sec. West Middlesex Waterworks.

*** We are glad to have this assurance from Mr. Hall, but we believe he is not quite correct in stating that the inspection of the reservoir by a committee of the Kensington Vestry was owing entirely to a dispute as to drainage. More than one member of the Vestry felt uncomfortable, if they do not feel so now, with respect to the pulpy condition of the ground at the foot of the embankment. However, we fully accept Mr. Hall's statement, and are glad we have elicited it.

"ART FURNITURE."

SIR,—"M." complains of the high cost of art furniture. He is not alone in his experience. It seems to me that one cause of the excessive charge for this kind of work is that the public wrongly believe that good workmanship and artistic design are to be had only at the large establishments at the West End of London.

Now, the high prices that these firms have been obtaining for their goods have induced some of their designers (who are also practically able to work out their own designs) to establish themselves in business, so that they may supply the public at a lower rate with equally good articles, and thus share with the purchasers the large profits which have hitherto been reaped solely by the proprietors of the gigantic establishments referred to above.

My attention was called some few weeks ago to a report in a local paper of a visit by one of its staff to the workshop of Mr. Jacobs, 42, Kentish-town-road, and being myself interested in art furniture, I was induced to inspect the articles which had elicited such high commendation from the reporter. The result of the visit was to convince me that excellent workmanship combined with artistic design is to be obtained at a cost considerably below that of the same kind of furniture purchased in the usual way.

Let intending purchasers, therefore, visit the workshops rather than the showrooms, and deal with the artist rather than with the capitalist.

A LOVER OF ART FURNITURE.

CONCRETE BUILDINGS.

SIR,—A correspondent asks some questions relative to concrete buildings. If timbers are of large dimensions it would be better—at any rate in most cases—to leave cavities for their insertion afterwards; if this cannot well be done, then immerse their ends in water, so that they may expand previously to being built in. In timbers of small scantling no precautions are, as a rule, necessary, and the walls must certainly be stronger than when left full of holes. The ballast should be screened if any portion would not pass through a 3-in. mesh sieve or screen, and for thin walls a smaller mesh is preferable.

For concrete in the proportion of seven of ballast to one of cement, by measure, a fair price would be from 10*s.* to 13*s.* per cubic yard, depending on the local price of labour, and of cement delivered on works; also if the contractor has to find his own appliances. "Concrete and its Use in Building" (Spon & Co. 48, Charing-cross) treats more fully the different questions asked by "Concrete."

THOMAS POTTER.

ST. MARY-LE-BOW, CHEAPSIDE.

SIR,—This church, with the tower and spire, the masterpiece of Sir C. Wren, is to be done up and thoroughly renovated under Mr. Blomfield. Judging from the taste and architectural skill displayed by this gentleman in doing up St. Giles's-in-the-Fields, we may fain hope and trust he will leave Bow Church a credit to himself and an honour to the City of London, instead of, as now, a perfect disgrace to Cheapside.

We need, sir, in these days of so-called restoration (?) of many of the finest of our Italian churches, be on our guard; for, instead of being a restoration of the interior, it is, in nine cases out of ten, just the reverse,—simply a destruction of every feature of the architect's work. The edifice is left a perfect wreck of its former self, not one single feature of it is left as the architect designed it. Windows bricked up; galleries pulled down; the organ, once a beautiful architectural ornament to the interior, now as so much old lumber, stowed away in some hole and corner; pews swept away; pulpits cut down and spoiled of their original noble proportions; and I do not know what other grievous injury done. These are truly wrecks of their former selves: witness the churches of St. George, Bloomsbury, St. Mary Woolnoth, St. Paul, Covent-garden (a most grievous case), and Christ Church, Spitalfields.

It is high time such so-called restoration should cease; and it is to be lamented the laity should be so foolish as to subscribe their money for such a purpose.

R. PAYNE.

CEMENT KILNS.

SIR,—As several cement-makers are now adopting the method of drying with the waste heat, so called, simply on the tunnel-flue system, being both for drying and burning at the same time, as for manufacturing Portland cement, instead of drying on the old process, with flues under fire-tiles, though there is a patent for the tunnel plan, I wish to claim an improvement in the formation, which brings the heat more fully over the stuff while drying from the burning kiln. Say on the old plan there is a tunnel 100 ft. long, 15 ft. wide, and about 6 ft. high in centre inside. The slurry is run on to the floor to dry; the kiln is lighted, and the heat from the kiln when passing through this tunnel begins to dry the slurry. Directly at the back end, on the top or crown of the tunnel, is a small chimney, so by the height of the crown from the floor-level a bulk of heat is required to fill this tunnel, to be of any service for drying the stuff, and not decreasing the draft of the kiln.

The improvement I claim is this:—Relative to the formation of and improving the heat and smoke passage, before it gets to its chimney when leaving the tunnel, I have a descending flue, say about 2 ft. below the floor-level at the back end; and thus, by so arranging, instead of the great bulk of heat playing on the crown or roof of the tunnel, it plays directly over the slurry, taking the heat from the crown directly on to the floor, where the heat is most required to dry the slurry. Also at every 10 ft. through the length of tunnel I have man-holes for ventilation, and to give more light for men while stripping the floor to load the kiln.

There are still greater improvements to be made as to the best methods for consuming the gases. When I say "consuming," I say practically they can be consumed, and made of great service for drying, instead of being wasted.

W. MAY.
Northfleet.

"**Coals to Newcastle.**"—The *Scotsman* says that the first importation of foreign granite, very similar to the local blue granite, arrived at Aberdeen Harbour last week from Stettin, by the schooner *Grace Rome*, which had fifty tons on board, and the schooner *Nelly*, with ninety tons.

STAINED GLASS.

Heptonstall.—The family of the late Mr. Thomas Smith, Bridge-lanes, have just had a stained-glass memorial window inserted in the Welsyan Chapel at Heptonstall. The window has been executed and placed by Messrs. Forrest & Sons, of Liverpool. It contains four figures,—Our Saviour and three others, whom he appears to be addressing.

Basingstoke.—Another light in St. Michael's Church, Basingstoke, has been filled with painted glass, the donor being Miss Doman, in memory of her late father and mother. The work has been executed by Messrs. Lavers, Barraud, & Westlake.

Coventry.—A stained-glass window has recently been erected in Holy Trinity Church Coventry, to the memory of Dean Hook, formerly vicar of the parish. The window is at the west end of the church, and consists of fourteen lights, which are occupied by figures of our Lord as the Good Shepherd, St. John the Baptist, and the twelve Apostles. The window was executed by Messrs. Heaton, Butler, & Bayne, at a cost of 600*l.*

Brighouse.—The parish church of Brighouse has recently received an addition, in the shape of a stained-glass window on the south side of the church. The donor is Mr. Kaye Aspinall, of the Manor House, and the gift is in remembrance of her late husband. Messrs. Hardman & Co., of Birmingham, have executed the work, and the glass is in the fourteenth-century Decorated style. The upper portion is filled in with a representation of the Crucifixion, and the Supper at Emmaus; underneath is a group representing St. John baptising our Lord, and our Lord arraigned before Pontius Pilate.

Chichester.—Chichester Cathedral is about to be enriched by two memorial windows. One is in memory of the late Mr. John Abel Smith, for many years M.P. for Chichester; the other is in memory of the late Hon. Colonel Gage, Commandant of the Royal Sussex Light Infantry Militia. A firm at Metz has manufactured the Smith memorial window; Messrs. Clayton & Bell were entrusted with the Gage window.

Louth.—Another stained-glass window has been placed in the south aisle of the parish church, Louth, Lincolnshire, by Mr. Cornelius Parker. It is a three-light window. The subject illustrated by the central light is "Sampson bearing away the Gates of Gaza," while events in the lives of Ruth and Jephthah are represented in the other two lights. The window is the work of Messrs. Hardman, Birmingham.

Windsor.—A memorial window has just been placed in Windsor parish church, at the east end of the north gallery, to the memory of the late Mr. G. W. Johnson, whose lamentable death in Switzerland last summer evoked so much sympathy. The subject is the Resurrection, and it fills the three lights. The window is the work of Messrs. Lavers, Barraud, & Westlake, of London.

Debach.—A stained-glass window has lately been inserted at Debach Church, Suffolk. It consists of two lights and tracery. The subjects of the dexter light is "In the field at eventide," whilst in the background the procession of camels, with Rebecca, is to be seen approaching. The sinister light represents Jacob and Rachel at the well. The tracery contains the labourer in the vineyard. The window is the work of Messrs. John Hardman & Co., of Birmingham. It is in the Decorated style, and was fixed by Mr. W. Stephen, of Woodbridge.

Drumragh (Ireland).—A stained-glass window has been erected by the members of the Omagh Masonic Lodge, No. 332, in the parish church of Drumragh, in memory of the late Dr. Henry Thompson, who was for many years connected with the Craft. The window is by Wailes & Co., Newcastle-upon-Tyne. The central design is a representation of the Great Physician healing those who were brought to Him.

Stroud.—The *Gloucestershire Chronicle* states that in consequence of the fading of the colours in the stained-glass windows at Stroud parish church, "the London firm who supplied them have taken out the glass from two, and substituted new, and it is to be hoped better, glass in its place. They have also taken the glass from the large south-east window, and will fit new glass there. The firm are doing this without remuneration. The chancel window, which is sadly discoloured, will also be re-glazed."

Eversholt.—Three painted glass windows have been presented to the parish church of St. John the Baptist, Eversholt, by Mrs. Lynn Smart, of Lindon House. They have been placed in the chancel, and represent the revelation of the Saviour to the Baptist, the preaching of John in the wilderness, and the healing of the ten lepers. The latter has been inserted in an ancient leper window. The work was executed by Messrs. Clayton & Bell.

Earley.—Two stained-glass windows have recently been erected in the Church of St. Peter at Earley, Reading, in memory of the late Mr. Nixon, of Belle-vue. The one in the north transept comprises six subjects, designed to illustrate St. Matthew xxv. 35-36. The other, which is a lancet window on the south side of the chancel, contains the figure of St. Bartholomew. Both windows are the work of Messrs. Clayton & Bell.

Chiswick.—A stained-glass window has lately been erected at the west end of the church, consisting of three lights and tracery. It is the gift of Mrs. Wilson, of Ealing, in memory of her husband, who for many years resided at Broadmore House, Chiswick. The window was executed by Messrs. A. L. Moore & Co., of London.

CHURCH-BUILDING NEWS.

Leighterton.—St. Andrew's Church, Leighterton, Gloucestershire, has lately been re-opened, after restoration. The north wall of the nave has been removed, and pillars and arches substituted, and on the same side a new aisle has been added the whole length of the nave, which gives the building a width of about 27 ft., and adds greatly to the accommodation of the worshippers. The transept has been removed, and the chancel shortened about 10 ft. or 12 ft., so that the length of the nave and chancel is now about 54 ft. The lectern is of oak, and is a present from the builder, Mr. Brown, of Tetbury, who has carried out the design of the architects, Messrs. Waller & Son, of Gloucester.

Little Chart.—The parish church of Little Chart, Kent, has been re-opened, after being closed a year and eight months for restoration. The work has been carried out by Mr. Adcock, builder, of Dover, from designs by Mr. D. Rundle, architect, London. New roofs and flooring have been constructed, and open benches substituted for unsightly pews.

Arlesey.—The old wooden structure which has until lately done duty for a tower at Arlesey parish church, Bedfordshire, has, owing to the liberality of Mrs. Bedford Edwards, been replaced by a new tower, and the parishioners have subscribed to provide a peal of bells for it. The "opening ceremony" took place on the 27th June. Mr. A. W. Blomfield was the architect, and Mr. Palmister, the builder.

Hibaldstow.—The parish church of St. Hibald, Hibaldstow (a village situated on the old Roman road, between Brigg and Redbourn) was lately re-opened, after restoration. Ten years ago the Ecclesiastical Commissioners restored the chancel. During the restoration the tower fell, and for want of funds has not at present been rebuilt. The church in its restored state consists of nave, north aisle, and chancel. The style adopted is that of the thirteenth century. The nave consists of four bays. The western one on the south side is the entrance to the church. The arcades have plain chamfered arches resting on plain cylindrical pillars, with moulded capitals. The chancel-arch is rather lofty, the inner rib resting on a dwarf column The ancient town-arch is rebuilt in the west wall of the present church. Mr. James Fowler, of Louth, the consulting architect to the diocese of Lincoln, prepared the plans, and, under his superintendence, the work has been so far completed. Mr. Robert Barker, of Lincoln, was the builder, and Messrs. Hobson & Taylor, of Hogsthorpe, near Alford, have done the woodwork. The stone is that of the former church. The total cost was about 1,300*l.*

Birmingham.—The foundation-stone of the new Church of St. Catherine, Nechells, was laid on the 27th of July by Miss Mary Ryland. The church will stand at the corner of Scholefield-street and Smith-street, Nechells, and will be built from the designs of Mr. F. R. Osborn, of Birmingham. It will consist of nave, chancel, north and south transepts and aisles, organ-chamber, clergy-vestry, and a large choir-vestry, that may be used for meetings. The nave will measure 80 ft. long and 30 ft. wide; the chancel, 20 ft. long and 22 ft. wide. The width of the church, from transept to transept, will be 82 ft., and the height to the ridge of the roof, 58 ft. The building is to be in the style of the thirteenth century, and constructed with red bricks with stone facings, and red tile roof. In the interior the arches of the nave arcade, chancel-arch, &c., will be red brick, and the columns will be stone, with moulded capitals. The seats will supply accommodation for 756 persons. Half of the sittings will be free. The estimated cost is between 6,000*l.* and 7,000*l.* Messrs. Jeffrey & Pritchard are the contractors.

Woodditton.—The Manners Memorial Church at Saxon Street, an outlying hamlet of the parish of Woodditton, near Newmarket, has been opened. It has been erected at the cost of Lady Adeliza Manners in memory of her husband, the late Lord George Manners, M.P. The building is in the Early Pointed style, and consists of a nave and chancel. As the hamlet of Saxon Street is but a small one, it has been necessary only to provide accommodation for 100 persons, but provision is made for extending the church westward, the nave being at present only about 50 ft. long. The chapel is built of brick, with stone dressings, and is simple in character. All the windows have trefoil tracery in the headings, and are filled with cathedral glass, arranged in patterns. The roof is of a good pitch, and is divided into panels by means of moulded ribs, the surface of the panels being plastered in readiness for future decoration. On the south wall of the chancel is a tablet bearing a brief history of the Manor of Saxon Street. On a corresponding tablet on the north side is an inscription recording the circumstances under which the church has been erected. The architect is Mr. John D. Sedding, of London, and the work has been executed by Mr. Robert Tooley, of Bury St. Edmunds. The entire cost of the church and fittings is about 850*l.*

Great Blakenham.—The ancient parish church of Great Blakenham, Suffolk, has just been re-opened, after restoration under the direction of Messrs. Cory & Ferguson, architects, Carlisle. The work has consisted, to a very large extent, in undoing what previous generations had done. The western gallery, which was built about forty years ago, and paid for by robbing the belfry of one of its bells, has been removed, and a small organ-chamber built on the north side of the chancel. There has been a complete clearance of the old high-back pews, and in taking them down it was discovered that a large portion of the richly-carved screen, which formerly adorned the church, had been cut up and utilised. For these pews massive oaken benches, with carved poppy-heads, have been substituted. The backs of the large new benches in the chancel have been carved after the pattern of those placed in Earl Stonham Church. Originally the chancel had no east window, but triplet lancet windows were inserted. The two outside windows were filled up, while the middle lancet had been enlarged into a two-light window with brick mullions. The splays of the outside windows were found to exist, and it was determined to substitute the middle lancet for the two-light window and to restore the side lancets. Nothing has yet been done to the tower. The stonework has been repaired where absolutely necessary. Messrs. Wells & Kemp, of Dicklesburgh, did the mason's work; and Mr. Gibbons, of Earl Stonham, the carpenter's work. The carving is by Mr. Godbold, of Harleston.

Oxford.—The new chapel of St. Edward's School, Summertown, Oxford, and the burial-ground adjoining, have been consecrated. An entrance to the chapel is obtained by an addition of five bays to the short cloister at the east end of the school building. The deeply recessed and moulded doorway leads into an ante-chapel divided from the chapel proper by a wooden screen, forming the back to the master's stalls, and also the front to the organ-loft, which is over the ante-chapel; gates in the centre of this screen give access to a wide central aisle, the seats being arranged on both sides to face the east. The chancel is approached by six steps, the altar being still further raised on a platform at the apsidal end three steps higher. The whole length of the chapel is about 94 ft., and the entire width 26 ft. 6 in. The height, from floor to roof plate, is about 30 ft., and to ridge about 50 ft. The style adopted is Early English, in character with the school building. The materials employed are Gibraltar stone for the walling, and Box-ground Bath stone for the dressings. The roof will be covered with Broseley tiles. The works have been carried out by Messrs. Symm & Co., under the superintendence of Mr. Wilkinson.

Streatham.—Owing to the limited accommodation afforded by the old vestry, a new clergy-vestry has just been added to the parish church

of St. Leonard, Streatham. It is in the form of a chancel chapel with an open-trussed rafter roof, and has a couple of lancet windows in the east gable, and circular traceried window over, both filled with cathedral rolled glass in ornamental quarries. Mr. Mason, of Streatham-common, was the builder, and Mr. Edmund B. Ferrey the architect. It has been also proposed to remove the existing lath-and-plaster ceiling to the nave, and to put a better arcade, more in character with the new chancel added in 1862.

Hockerill.—The proposed works at All Saints' Church, under the diocesan architect, include the addition of a new north aisle, the lengthening of the existing building by about 14 ft., the providing of a vestry for the choir, and the enlargement of the organ chamber. The tender of Messrs. Gregory, of Clapham, has been accepted,—the exact amount being 6,145*l.*, but there will be other expenses beyond this, such as architect's commission, &c.,—and the work has already been commenced. Mr. G. Cheswink is clerk of works.

SCHOOL BOARD SCHOOLS IN LONDON.

THREE new schools have lately been completed and opened by the School Board for London.

The first is situated in Belleville-road, New Wandsworth, and consists of a single block of buildings, three stories in height, surrounded by spacious play-grounds. The ground-floor is devoted to the infants and school-keeper. On the first-floor are placed the girls, and at the top the boys, each department having a double school-room and two class-rooms, together with ample cloak-rooms, lavatories, and separate staircases. The accommodation is for 271 boys, 269 girls, and 276 infants,—total, 816 children. The cost of the ground was 1,661*l.* 6s. 2d., and that of the building, 9,157*l.* 18s. 8d., making a total of 10,819*l.* 4s. 10d., or equal to a total cost per head of 13*l.* 5s. 1d. The style is that generally adopted, namely, Queen Anne, from the designs of the Board's architect, Mr. E. R. Robson, the builder being Mr. Thompson, of Camberwell, and the clerk of works Mr. Hall.

The second school is located in the Stockwell-road, Brixton, and has cost in all 13,500*l.*, being 16*l.* per head for 271 boys, 270 girls, and 293 infants, the number of children for whom places are provided. This school is in the prevailing style, and the architect is Mr. Robson.

The third school has been erected in the Coal-yard, Drury-lane, in the centre of one of the poorest and most densely-crowded districts in the metropolis, illustrated by us on many occasions in days gone by. The ground-floor is devoted to a covered playground for girls and infants, and apartments for the school-keeper. On the first-floor is the infants' department, comprising schoolroom, class-room, and "babies" room. On the second floor are school and class room for girls, and above, those for the boys, each with separate entrances, staircases, cloak-rooms, and lavatories. There are also good playgrounds for both boys and girls. The area of the site is 10,538 square feet, and the accommodation is for 182 boys, 182 girls, 204 infants, being for 568 in all. The cost of the building is 7,191*l.* 17s. 9d., and the cost of the site (including legal expenses), 12,676*l.* 5s. 9d., making the total cost 19,868*l.* 3s. 6d., or equal to 34*l.* 19s. 6d. per head,—one of the costliest schools yet built by the Board. This school was also erected from the designs of the Board's architect, Mr. Pritchard being the builder.

These three schools are respectively the 157th, 158th, and 159th of the permanent schools opened by the Board, and bring the aggregate number of "school-places" so provided for up to 157,000.

SCHOOL BOARD SCHOOLS.

Whitton (*Suffolk*).—The School Board have accepted the tender of Messrs. Mason & Son, builders, Haverhill, for the erection of the new schools and teacher's residence. The site selected is at Baythorne End, and the works are to be commenced immediately. Mr. Frank Whitmore, of Chelmsford, is the architect.

Over.—New Board Schools at Over, Cheshire, were opened on the 15th ult. They have been erected from designs (selected in competition) by Mr. J. W. Trounson, architect, of Stonehouse, Devon. The contract was taken by Mr. Eli Pickstock, of Over, Mr. Bratt acting as clerk of works. The buildings are constructed of best pressed bricks, with Kelsall stone dressings. The infant schoolroom, 60 ft. by 28 ft., is placed in front, and is entered by a large porch. Around the walls of the schoolrooms and class-rooms is fixed dado work, with ventilating capping, 4 ft. high from the floor. The mixed schoolroom, 52 ft. by 20 ft., and two class-rooms attached to the same, each 20 ft. by 15 ft., are fitted up in like manner. The height of all the rooms (except the infants' schoolroom) is 12 ft. to wall plate, and 20 ft. to ceiling boarding. The height of the infants' room is 14 ft. to wall plate, and 22 ft. to the ceiling boarding. The cost of the new buildings (including master's house) and fittings is about 2,700*l.*

Exmouth.—The schools erected by the Exmouth School Board, on a site in the Exeter-road, have just been completed. The accommodation is for boys and girls only, each department having a schoolroom with one class-room. The residence for the master is rather larger than usual, and on the ground-floor is a spacious board-room, with book-store adjoining, entered from a separate porch. The walls are of brick, built hollow, faced with red bricks relieved by a few black bands. The roofs are tiled, and above the main gable rises a flèche for bell. The works have been carried out by Messrs. H. & F. Burridge, of Exmouth, from plans prepared by Mr. H. Lovegrove, of London. Mr. F. E. Carter has acted as clerk of works.

Laindon.—New Board schools have been opened at Laindon. They have been built from plans by, and under the superintendence of, Mr. Joseph Peacock, architect.

Sevenoaks.—A new Board school for infants is in course of erection at Sevenoaks. Mr. D. Grover is the builder, and the cost will be 1,000*l.*

Great Yarmouth.—The new Board School on St. Peter's Plain, to be known as St. George's School, has been opened. Mr. J. T. Bottle was the architect.

Sedgley.—The Sedgley School Board has commenced the erection of its first school, situate at Daisy Bank. The architect is Mr. E. P. Brevitt, of Darlaston, and Messrs. Jones Bros. are the builders. The cost will be about 2,500*l.*

MASTERS AND MEN.

London.—On the 23rd ult. a general meeting of the London masons was held at Cambridge Hall, Newman-street, Oxford-street. Mr. Henry Broadhurst in the chair. The chairman congratulated the meeting on the steady progress that had been made during the past week, and said there was every prospect of the difficulty terminating in considerable advantages to the men. Many of the employers had been induced to join the opposition to their demands, and pressure had been brought to bear upon them which, if practised on their side, would be called intimidation and coercion. This had been done by means of a circular, a copy of which had been shown him, and which had been issued by the employers' Association. He did not see why, when employers resorted to such very strong moral pressure to effect their objects, their conduct should not be noticed and commented upon in the same way as when something of the same kind had happened on their side. Since their last meeting, the men on strike had been reduced by 230, the number at present on the strike-roll being about 700. He reminded the younger men that it would be of advantage to the general body if they obtained employment in provincial towns while the dispute was pending. Mr. Prowse, as an employed mason, said the time had now come when those who were in work should contribute to those who were on strike. He therefore moved that the committee be empowered to call a special meeting for the purpose of considering the advisability of raising the weekly levy from 4s. to 6s., or 1s. per day instead of 8d. There were many families already crying out that they could not stand long on 15s. a week. They had been promised 18s., but only 15s. had been given them. The motion was carried unanimously. It was stated by a member of the committee that six additional firms had complied with the demands of the men, making 100 in all who had accepted the new terms since the commencement of the dispute. Mr. Phillips proposed, and Mr. Guillan seconded, the following, which was intended to rescind a resolution in reference to the same subject passed at the last meeting:—

"That in all firms in dispute where foremen, mould-cutters, or others act in the capacity of directors, or give instructions to bricklayers or labourers to fix or arrange stone, the committee be empowered to use their discretion to call out such men as may be deemed necessary."

This gave rise to considerable discussion, and ultimately it was negatived by a large majority. Mr. Guillan next proposed, and Mr. Redman seconded:—

"That all public masons working marble shall not be allowed to work for any builder or contractor who has not conceded the 10d. per hour, and that sanitary engineers and marble factories be not included in the category of builders and contractors."

This was adopted. The special meeting referred to above was held on the 29th ult., when it was resolved, by a large majority:—

"That, in consequence of the great increase in the number of men in employment, it is not necessary to increase the levy."

On the 25th ult. the Labourers' Union held a meeting at the Surrey Rooms, Blackfriars-road. The chair was occupied by Mr. R. Warner. Mr. Kenny, the general secretary, stated that several statements had appeared relative to the strike, with the view of deceiving the men and the public. After a searching inquiry he found that 100 master builders had conceded the advance of wages asked for by the men, and that some of the associated masters were doing the same indirectly. Another firm (Messrs. Newman & Mann, of Lant-street, Borough) were going to take the men on at 10d. per hour on Monday, the 27th ult. A proof that the masters were giving in was that the number of labourers out of work by the strike of the masons had rapidly decreased, as was shown by the fact that, whilst on the 28th of July there were 1,200 out, now there were not more than 30.

Manchester.—At a large meeting of the master-builders, held on the 21st ult., representatives attended from Birmingham, Liverpool, Oldham, Wolverhampton, Bolton, Stockport, St. Helen's, Warrington, Wigan, Northwich, Birkenhead, Southport, and Altrincham. About ninety Manchester firms were also represented at the meeting. The following resolutions were unanimously passed:—

"That this meeting, having heard the statements of the Manchester employers, and the employers in the other towns on strike, heartily approve of the action they have taken in the matter of the joiners' strike; counsels them to continue their efforts to get new men into the town, and pledges itself to do all that is possible in assisting them to bring the strike to a successful issue."

"That a committee be formed to apportion England into districts, and communicate with the leading employers, with the view of forming a National Association of Master Builders."

The meeting was very unanimous, and a determination expressed to abide by all former resolutions as to wages and hours.

Aberdeen.—At the meeting of the Aberdeen Lodge of the Operative Masons of Scotland, held on the 20th ult., it was unanimously agreed by the members to resume work on the old terms.

Wolverhampton.—At a meeting of the Wolverhampton Master Builders' Association on the 22nd ult., the refusal of the chairman, Mr. Hyam, to consider the proposition of the men on strike to refrain from any agitation for two years if during that period they were paid 8½d. per hour, was unanimously approved of.

THE FORTHCOMING TRADE UNIONS CONGRESS.

THE meetings of the Trade Unions Congress will be opened in Leicester on the 17th inst. The Parliamentary Committee have prepared their report. Their efforts have been chiefly directed to the putting forward of Mr. Macdonald's Compensation for Injuries to Workmen Bill, which, after a somewhat favourable reception, was withdrawn. The committee exerted their best efforts to facilitate the passing of the Factory and Workshops Laws Consolidation Bill, and also Mr. Hopwood's Summary Prosecutions Bill. Petitions were got up all over the country, through the agency of trade unions, in favour of these Bills, and many consultations with private members of Parliament were held in order to secure for them full support within the house. The committee had received valuable assistance from Mr. Mundella, Mr. Macdonald, Mr. Burt, Sir W. Harcourt, Sir H. James, Mr. Herschell, and other members, as well as from Lord Coleridge, Sir Fitzjames Stephen, Mr. Crompton, Mr. Harrison, and other members of the bar. The committee appointed to arrange for the congress have prepared a programme of business to be transacted, as well as the following programme of Parliamentary work for the session of 1878, when the congress will be asked to carry out by the aid of the Parliamentary Committee which will be elected:—

1. To amend the law of compensation to workmen in cases of accidents, so that workmen or their families may recover from an employer in the event of injury or death from accidents due to negligence.
2. To secure the passing of the Government Bill to amend and consolidate the laws relating to factories and workshops.
3. Reform of the administration of justice.
4. The codification of the criminal laws.
5. Reform of the jury law, by lowering the qualification for jurymen so as to admit a large number of workmen to the discharge of the duties of jurymen, and provide reasonable payment for losses of time.
6. The extension of the Employer and Workmen Act, 1875, to English seamen whilst in British water.
7. Reform of the patent law.
8. Abolition of imprisonment for debt.
9. Compulsory certificates of competency for men in charge of steam-engines and boilers.

The other subjects set down for discussion are co-operation and its relation to trade unionism; representation of labour in Parliament; overtime and apprentices; conciliation and arbitration in trade disputes, and what should be the basis upon which an arbitrator should decide the question of an advance or a reduction of wages.

Books Received.

A Practical Treatise on the Manufacture and Distribution of Coal Gas. By WILLIAM RICHARDS, C.E. With numerous plates and illustrations. London: Spon. 1876.

THIS handsome quarto, of 365 pages, illustrated with 29 full-sized plates, and numerous woodcuts, fills up a serious gap in the bookshelves of the engineer's library. Mr. Richards enters, with order, minuteness, and lucidity into the various questions concerning the manufacture of gas. He first refers to the discoveries of the ponderability of air, and of the inflammability of certain gases; together with the old phlogistic theory of combustion. The honour and merit of the first application of coal gas to useful purposes are, he tells us, beyond all question or doubt, due to Mr. William Murdoch, who, in the year 1792, when residing at Redruth, in Cornwall, directed his attention to the quantities and qualities of the different kinds of gases obtained by distilling various mineral and vegetable substances. Murdoch's apparatus, he tells us himself, consisted of an iron retort, with tinned copper and iron tubes, through which the gas was conducted, being burned as it issued through apertures of different forms and dimensions. In 1798, Murdoch removed from Cornwall to Messrs. Boulton & Watt's works, at Smethwick, near Birmingham, known as the Soho Works. He there constructed an apparatus on a larger scale, but seems to have done at first little more than experiment. On the conclusion of the Peace, in 1802, a public display of the new light was made, by the illumination of the Soho Works; and from that time gas was employed as the only artificial source of light on these premises. In 1799, Philippe Lebon patented in France an apparatus, by which he says that hydrogen gas in a more or less state of purity, according to the means of purification employed, is principally obtained. Mr. Richards gives us a translation of Lebon's specification, with a copy of his drawing. Winsor, a German, whose proper name is stated to be Wintzler, comes next on the scene. In 1809, Mr. Clegg, who had been a pupil at the Soho Works, erected a gas-apparatus at Coventry. In 1812, the first Royal Charter of incorporation was granted to the London and Westminster Gaslight and Coke Company, thenceforward called the Chartered Gaslight and Coke Company, who engaged Mr. Clegg as their engineer. By 1829, such had been the success of this undertaking, that as many as 200 gasworks had been established in various towns of the United Kingdom. About 1820, gas was first introduced on the Continent, being employed first for lighting the Luxembourg Theatre, at Paris, and soon after for lighting the theatre at Munich. In 1834, gas was introduced into the United States, New York being lighted by it. Rotterdam, Amsterdam, Havre, Caen, Amiens, and Nantes were also lighted at this period. In 1842, gas was introduced into Spain. The demand for gaslighting has increased, Mr. Richards remarks, in direct proportion to the amount of knowledge and experience of the subject.

A valuable paper, by Mr. Lewis Thompson, M.R.C.S., on the chemistry of gas manufacture, follows the interesting recital of the brief history of the invention. The question of coal is next handled. It was in the year 1234 that coal was first wrought as a commercial product. In that year King Henry III. granted a charter to the burgesses of Newcastle-on-Tyne "to dig coals and stones, and convert them to their own use," and some few years later it became an article of export, under the name sea-coal, by which term it was known in the time of Shakspeare. In 1306 a representation was made to King Edward I. as to the pollution of the atmosphere caused by the vapours of coal, and a proclamation was issued prohibiting its use! Mrs. Quickly, who promised John Rugby, "we'll have a posset for't soon at night, in faith, at the latter end of a sea-coal fire," can perhaps hardly be cited as a competent witness to prove the domestic consumption of coal, so far up the Thames as Windsor, in the reign of King Henry IV. But the quotation is enough to show that, in the reign of Elizabeth, the use of this article, as a luxury, was so common, that such an unrivalled limner of manners as Shakspeare saw no impropriety in reflecting the glimmer of the hearth back to the days of "the mad Prince and Poins." In 1681, an "especial lycense" was granted to John Barber and another, "for a new way of making pitch and tarre out of pit coals, never before found out, or used by any other." The specification of the patent granted to Hawkins, in 1746, is so clear and precise as to be useful, even at the present day, to persons not intimately acquainted with the subject of the distillation of coal. Eleven years before the commencement of the experiments of Murdoch, a patent was granted to Lord Dundonald for extracting all the constituents of coal, except gas! The amount of coal raised in the United Kingdom in 1876 was 148,989,385 tons, and the number of lives lost in producing it was 933, or about one to every 160,000 tons raised.

A very valuable table of analyses of different kinds of coal, drawn up by Mr. John Paterson, shows the quantity of gas producible per ton, the illuminating power of the gas, the residual ash, and other details. Analyses of various kinds of cannel and bituminous coals follow; and an amount of information is here concentrated which it would take long and tedious search to collect from reliable sources.

A good chapter on carbonisation contains a table of degrees of heat, from the faint deep red, just visible in a completely darkened room (which the dining-room poker not unfrequently exhibits), at 600° Fahr., to the melting-point of cast iron, at 2,786° Fahr.

The fifteen following chapters describe in full and intelligible detail the progress of retorts and fittings, the arrangement of gas apparatus, condensers, exhausters, the hydraulic mains, washers and scrubbers, gas-holders, tanks, meters, governors, and gauges. Page 238,—the chapters are not numbered,—brings us to the subject of the Photometer, which was originated by Count Rumford. Drawings and descriptions are given of the photometers of Bunsen, Evans, Letheby, and Lowe, and of the delicate and beautiful instrument invented by Mr. W. Crookes, F.R.S., and known as the radiometer. The arms of this instrument rotate with more or less velocity under the action of radiation, the rapidity of revolution being directly proportionate to the intensity of the incident rays. Placed in the sun, or exposed to the light of burning magnesium, the rapidity of the movement is so great that the separate discs are lost in a circle of light. Exposed to the light from a candle, 20 in. off, an instrument gave a revolution in 182 seconds. With the same candle placed at a distance of 10 in. a revolution occurs in 45 seconds; 5 in. off, a revolution is made in 11 seconds. Thus the velocity of radiation is inversely proportional to the square of the distance. At the same distance, the light of two candles gives a velocity double that produced by one candle, and so on up to twenty-four candles. When the light is strained or filtered through glass of different colours, a scale of force is obtained, varying from one revolution in 40 seconds, from a candle 5 in. off, behind green glass, to one in 20 seconds, from the same candle, behind light red glass.

Distribution of gas is next discussed. The first item under this head is that of mains. Wood, brick, earthenware, glass, paper, have all been employed; but the testimony of Mr. Richards is to the effect that the only description of main, besides cast iron, that has met with any degree of success is that manufactured by Chameroy & Co., of Paris, under the name of the "Chameroy pipe," which is formed of leaded sheet iron of a thickness corresponding to the diameter, and which is riveted and soldered along the seam. The largest cited is 18 in. diameter, and of the thickness of No. 16 B W gauge. The weights of cast iron mains vary, as shown in a table, from 22 lb. per yard, for a 2-in. pipe, to 15 cwt. per yard, for a 48-in. pipe. The cost of laying varies from 7d. per yard for a 2-in. main with turned and bored joints, to 7s. 2d. per yard for a 24-in. main. If the joints are leaded, the respective prices range from 10d. to 9s. 8d. The gas unaccounted for in the returns of the metropolitan gas companies now averages about 7·32 per cent. of the total production. Thirty years ago this loss, which was attributed to leakage, was set down at from 30 to 35 per cent. It is unnecessary to point out the practical value of a work which furnishes to the engineer carefully collected and arranged details of this nature.

With regard to the discharge of gas through mains, a table is given which was prepared by the late Thomas Greaves Barlow. We should like to see tables similar to this and to those above mentioned prepared for water supply, and a mode of controlling Sir J. Bazalgette's estimate of 5½ millions for relaying London would at once result. A pipe with a diameter of 0·5 in. will deliver 21·7 cubic feet of gas per hour through a length of 150 ft. under a pressure of 0·5 in. of water. To supply a quantity of 332,000 cubic feet per hour, through a distance of 10,000 yards, requires a diameter of 36 in., under a pressure of 4 in. of water. All intermediate deliveries may be obtained from the table.

Chapters follow on services, consumers' meters, and gas-burners. With pressure so arranged as to deliver 5 cubic feet of gas per hour from each burner, the light obtained from gas issuing at a pressure of one-tenth gave the light of twelve candles; while that issuing under a pressure of forty-tenths gave no appreciable light. Thus excessive pressure, or restricted diameter of burner, leads to a wasteful and unilluminative consumption. The Report to the Board of Trade by the Gas Referees, made in 1871, is cited; and valuable chapters on the manufacture and manipulation of gas conclude a most instructive book. As an instance of the practical bearing of the author's labours, we call attention to the chapter on "Residual Products." So great is the loss occasioned by the stacking of coke, that Mr. Richards states that it is more profitable, taking labour and other things into consideration, to dispose of coke as produced at 12s. per chaldron, than to stack it for six months, and then sell it for 16s., or for twelve months and then sell it for 18s. It is not too much to say, not only that no gas engineer or gasworks manager will do justice to his employers if he fails to study Mr. Richards's book, but that many of those proprietors who now enjoy 10 per cent. dividends from gas stock, will do well to make themselves acquainted with its very instructive pages.

Centennial Portfolio: a Souvenir of the International Exhibition at Philadelphia. By THOMPSON WESTCOTT. London: Sampson Low & Co.

The Pennsylvania Railroad: its Origin, Construction, and Connexions. By W. B. SIPES.

EITHER those who did go to the "Centennial," or those who did not, and wish to keep an agreeable memorial of it, cannot do better than obtain Mr. Westcott's book. It comprises tinted lithographic views of fifty of the principal buildings, with brief descriptions sensibly written.

The second book named (issued by the same publishers in London) is very fully and very well illustrated with engravings on wood: some of them very creditable to Jas. W. Landerbach.

Cottage Gardening; or, Flowers, Fruits, and Vegetables for Small Gardens. By E. HOBDAY. London: Macmillan, 1877.

EVERY sensible endeavour to spread a taste for gardening, or to help on those who have the taste, has our best wishes, and this little book is one of such endeavours. Mr. Hobday points out the best flowers, fruits, and vegetables for small gardens, and gives much sensible information in a small space. The difficulty would seem to be to get the book into the hands of those for whom it is intended.

Swansea.—Memorial stones have been laid of a new Wesleyan Chapel at the Mumbles, Oystermouth, Swansea. The contract for the building has been undertaken by Mr. T. White; the architect is Mr. Totton. The accommodation will be for 800, and the expense will be 2,600*l*. A school-room will also be erected for 300 children.

Miscellanea.

Nottingham and its New Educational Buildings.—A correspondent of the *Nottinghamshire Guardian* says:—"It has been decided to erect in our very centre a block of buildings that it may become a future university. The town has, without material cost to itself, acres of land unbuilt upon, with streets of moderate width approaching thereto, and if we may judge by excavations in progress, we are about to erect a series of grand buildings without decent surroundings and without requisite facilities of approach. I considered we all had been consulted, and that we had agreed that the streets on all sides of the Horsefair Close should be widened—say to something like 60 ft., a very moderate width. Yet, what seems to be indicated? The architect's plans appear to have been so spread out that there is neither room for surroundings nor for the future widening of the streets. The process in operation is alarming, indicating a repetition of past mistakes. What would we not give now for Arkwright-street wider and Listergate? And as to the north end of Bridlesmithgate, there is a warning! We may, by proceeding cautiously, avoiding precipitation, make the centre of New Nottingham all it ought to be; but if the plans indicated be carried out, we shall throw away the grandest of opportunities. There is every opportunity now for widening Shakspeare-street, from Bilbie-street to Mansfield-road, to 60 ft. at least—at small cost—yet the opportunity is being disregarded. Sherwood-street and Bilbie-street are both too narrow, and yet, though they might both be widened without cost, they are apparently to remain for ever as they now are!"

The Finances of the Metropolitan Board of Works.—The new Act for further amending the statutes relating to the raising of money by the Metropolitan Board of Works has just been issued. It empowers the Board to raise any of the moneys which they are authorised to raise, and "which it may be convenient to raise for a temporary period," by the issue of bills, with the consent of the Treasury, for not less than three nor more than twelve months, to be repaid out of moneys raised by the creation of Consolidated Stock. Several amendments are effected as to the advances of money by the Board—for the purposes of the Fire Brigade Act, as if the sum was limited to 35,000*l.*, instead of 20,000*l.*; to Vestries and District Boards, as if the sum was 200,000*l.*, instead of a sum not exceeding 150,000*l.*; and to Commissioners, bodies, &c., to 100,000*l.*, instead of 50,000*l.* The Board may, up to the 31st of December, 1878, expend for the Fire Brigade up to 20,000*l.*, and other sums for public improvements; and they are empowered to advance money to the bodies mentioned, and to effect the several metropolitan improvements. The new money powers conferred by this Act (40 and 41 Vic., c. 52) amount to 4,622,007*l.*

Stephens's Stains.—We have received some specimens of Mr. Stephens's stains on deal varnished,—walnut, oak, mahogany, and satin wood,—and very good they are. We have known these stains so many years, and they have been so widely used, that commendation would seem to be nowadays scarcely necessary. They are more durable than paint, and dry quickly without smell. The process consists of three operations: first, staining; secondly, sizing; lastly, varnishing. The wood should be very evenly planed, and knots and nail-holes covered by a paste made of the stain with plaster of Paris, and sappy portions of the wood damped with water. The stain may then be laid on plentifully with a brush along the grain of the wood. When the wood is thoroughly dry, it must be twice sized (using each time a very strong solution of size), and subsequently varnished. If an interval of twenty-four hours or longer be left after staining, before sizing, the colour is softer and richer. As the beauty of the result depends mainly upon the grain of the wood, well-seasoned wood of beautiful figure and variety in the grain should be selected for choice work. The wood is invariably to be stained first, before sizing.

The British Archæological Association at Llangollen.—The thirty-fourth annual congress of the British Archæological Association is being held in Llangollen and neighbourhood this week. The meeting is regarded as a great success, although the weather has been somewhat unpropitious. Want of space compels us to defer fuller particulars until our next.

Calverley.—New Church schools are about to be erected at Calverley, near Bradford, as a memorial of the late Rev. Alfred Brown, vicar of the parish. The schools will be erected from the designs of Messrs. T. H. & F. Healey, of Bradford. The principal front of the schools will face to the south, and the building has been arranged to serve, not only for the purpose of elementary education, but also for a Sunday school and for public meetings. The plan consists of a large schoolroom, 60 ft. by 30 ft. and 20 ft. high to the ceiling, to be used as a mixed schoolroom; and four classrooms, two at each end, those to the south being 20 ft. by 15 ft., and 17 ft. high; and the others 17 ft. by 15 ft., and 12 ft. high. The entrances for the boys and girls are kept distinct. Advantage has been taken of the fall of the ground to obtain a large storeroom, kitchen, and boiler-house in the basement. The style is Gothic, of a simple Perpendicular character, with stone mullions and transoms to the windows, and ashlar dressings. The works have been let to the following contractors:—Messrs. T. Obank & Sons, Idle, masons; Mr. A. Lofthouse, Bradford, carpenter and joiner; Mr. W. Trelford, Apperley Bridge, plumber, painter, and glazier; and Mr. Wright Wheater, of Calverley, plasterer. The cost of the building, including fittings and fencing, will amount to 1,600*l.*

Walworth-road Railway Station.—On Saturday, 18th ult., at a meeting of passengers using the Chatham and Dover line, held on Peckham-rye, it was resolved to present a memorial to the Home Secretary, calling his attention to the great want of accommodation for the public at Walworth-road Station. All who know the line and this particular station (which has acquired the cognomen of "The Shoot") unite in the hope that the Government will compel the railway company to enlarge the station, not merely for the comfort of the passengers, but for their safety. The station is one of the most largely used, and therefore one of the "best paying," on the Metropolitan Extension of the company's system. The dangers and discomforts of the middle platform must be experienced to be appreciated. On the arrival of every train from the City (say from 5 p.m. until past midnight) hundreds of passengers are kept huddled together on a narrow strip of space, exposed not only to all weathers, but to the danger of passing "expresses." The wonder is that some terrible calamity has not occurred through the excessively over-crowded condition of the station.

Large Trees.—Attention has been directed to the extraordinary growth of trees in various parts of Scotland. At Springkell, in Dumfriesshire (says the *Dumfries Courier*), there are some remarkable silver firs. Twelve of the largest trees measure from 80 ft. to 115 ft. high and girth at 5 ft. up from 10 ft. 8 in. to 13 ft. 9 in., their cubical contents varying from 180 ft. to 520 ft. A few years ago a silver fir at Southwick, near Colvend, Kirkcudbrightshire, was 159 ft. high, 16 ft. 10 in. at 3 ft. up; and another on the same estate 134 ft. high, with a girth of 15 ft. 3 in. Besides these, there are several other fine silver firs on the Southwick estate about 12 ft. in girth. Though walnut trees never attain the height of the silver fir, their dimensions are not less worthy of notice. One of the finest specimens in Scotland is at Eccles, Dumfriesshire, and is 63 ft. high, girth at base 22 ft., and at 12 ft. up 13 ft. girth. Another at Gordon Castle, Banffshire, stands 66 ft. high and 11 ft. in girth at 3 ft. from the ground; and at Altyre, Morayshire there is one 62 ft. high, with a trunk 4 ft. in diameter. At Blair Drummond, Perthshire, there is one 75 ft. high and 13 ft. 7 in. in girth at 2 ft. up.

Bridlington Priory.—The partial restoration of the old priory at Bridlington, said to have been founded in 1066 for canons regular of the Order of St. Augustine, by Walter de Gaunt, grand nephew of William the Conqueror, is being attempted, and some 12,500*l.* have been raised in this popular watering-place and its neighbourhood. To restore the eastern parts of the edifice and the central tower would require 150,000*l.*, but the intention is to add shapeliness and beauty to what remains and to run up the two western towers!

Chapel Royal, Savoy.—By command of the Queen, the Savoy chapel will be closed for three or four months, to effect the construction of a new vestry, an additional entrance and porch.

"The Golynos Oak."—This wonderful tree, which (according to the *Journal of Forestry*) overspread 452 square yards of ground, grew on the estate from which it takes its name, about four miles from Newport, in the county of Monmouth. The diameter of the main trunk was 9 ft. 6 in., from which grew, exclusive of dead limbs, twelve branches, the largest of which contained 472 ft. of timber, and the whole product of this enormous oak was 2,426 ft. Its bark, which round the trunk measured 3 in. in thickness, was estimated at six tons. From the rings in the butt it was calculated that the tree had been growing upwards of 400 years, and from many of its lateral branches being dead and broken off, it is presumed it must have stood after it had attained its maturity little short of a century. It was purchased by the late Mr. Thomas Harrison, many years purveyor of Plymouth Dockyard and Dean Forest, in the year 1810, for 100 guineas, and when converted its total product was valued at nearly 600*l.*

The Coming Obelisk.—A correspondent at Alexandria writes on the 14th of August:—"The work of building the ship and securing the 'Needle' inside is quite finished, and the contractors now await a few days of calm and settled weather, as it will not be advisable to be interrupted in the process of launching by any strong winds or the least rough sea. The next spring tides will be about the 24th or 25th inst., at which time the contractors hope for some nice calm weather, and an increase of water above the usual level of 1 ft. 6 in. The strong north winds usually end about this date. After the ship has been floated, she will be towed round to the old harbour, and placed in the Government graving-dock, where the mast and sails will be put on board, also deck-house, ballast, provisions, pumps, bilge keels, rudders, and steering gear. This will occupy about a week."

The Proposed Industrial University.—The committee which is sitting at Mercers' Hall have asked the opinion of the following gentlemen, to aid them in formulating the scheme in furtherance of technical education, which is to be submitted to the consideration of the courts of the several livery companies after the recess, and towards which it is anticipated that annual subscriptions amounting to more than 20,000*l.* over and above the capital required for the buildings, apparatus, &c., will be forthcoming, provided the scheme is generally approved of:—The Right Hon. Lyon Playfair, M.P., Mr. I. Lowthian Bell, M.P., Captain Douglas Galton, C.B., Sir William Armstrong, Professor Huxley, Major Donnelly, and Mr. H. T. Wood (assistant secretary to the Society of Arts).—*City Press.*

Improved Mortar and Artificial Stones.—M. Decournean attributes the cracks in common mortars and cements to the uncombined quicklime that they contain. In order to neutralise the lime, he uses an *agrégat*, composed of a very fine silicious powder mixed with diluted nitric acid. He thus obtains mortar with much greater, more uniform, and more lasting resistance than those hitherto used. The application of his method, especially in the new forts of Paris, has given excellent results, without a single failure. Stone made by his process may be sawn and chiselled like natural stone.—*Soc. d'Enc. pour l'Ind. Nat.: Les Mondes*, quoted in the "Journal of the Franklin Institute."

A Big Library.—A new library is in course of construction in the States, which will, it is said, be the finest which America possesses. It is the Lennox Library, so named from its founder, who has given 400,000 dollars to build it, and has endowed it with 300,000 dollars. The sum available for the purchase of books will be 212,000 dollars. The building is to be 200 ft. long and 125 ft. wide, and constructed of white marble. It will contain 300,000 volumes, besides the private collection of Mr. Lennox, which contains 15,000 volumes, devoted mostly to the history of America and to Shakesperian literature.

American Cave and Cliff Dwellings.—There have been just added to the South Kensington Museum six models illustrating the cliff houses, cave dwellings, and lowland settlements met with through the district where the States of Utah, Colorado, Arizona, and New Mexico join. A series of models of the same kind was shown at the Philadelphia Exhibition, and through Sir Herbert Sandford these six have been presented by the United States' Government to this country.

TENDERS.

For works in the erection of a new Congregational Church, Furthergate, Blackburn. Quantities supplied. Mr. John Wills, architect:—

Catterall	£4,400 0 0
Baron	4,379 0 0
Chew	4,263 0 0
Fawcett	4,140 0 0
Arkwright	4,128 0 0
Whittacker (accepted)	4,126 0 0

For works in the erection of a Primitive Methodist Chapel, schoolroom, &c. Crich Carr, Derbyshire. Mr. John Wills, architect. Quantities supplied:—

Haynes (accepted)	£710 12 0

For Wesleyan Chapel, at Weston, near Newark. Mr. John Wills, architect:—

Hurst (accepted)	£410 0 0

For remodelling Primitive Methodist Chapel, Bradwell, Derbyshire. Mr. John Wills, architect. Quantities supplied:—

Lowe (accepted)	£652 0 0

For schools for the Methodist Free Church, Hollingworth. Mr. John Wills, architect. Quantities supplied:—

Curtis (accepted)	£860 0 0

For new Wesleyan Chapel, Anerley. Mr. C. O. Ellison, architect:—

Parnell	£9,730 0 0
Smith	8,913 0 0
W. & E. Nottle	8,558 0 0
J. & C. Bowyer	7,900 0 0

For additions to Monkton Combe Collegiate Institution, Bath. Mr. E. H. Lingen-Barker, architect:—

Hill & Gay (accepted)	£521 0 0

For the erection of a school for 200 children, teacher's residence, offices, and boundary walling, at Penwortha, Perranzabuloe, Cornwall. Mr. A. C. Hancock, architect:—

Trelease	£1,398 10 0
Julian & Sons	1,375 0 0
Boriase	1,340 0 0
Hancock	1,297 0 0
Bice	1,294 0 0
Robins (accepted)	1,280 0 0

For drainage works at the Cemetery, Brockley-road, for the Deptford Burial Board. Mr. A. G. Hennell, surveyor:—

Kent	£2,649 0 0
Woodham Brothers	2,567 0 0
Thompson & Son	2,487 0 0
McKenzie	2,320 0 0
Rowley	2,059 0 0
Cooke & Co.	1,930 0 0
Dover Brothers	1,665 0 0
Hare	1,650 0 0
Hubbard (accepted)	1,575 0 0
Simmons	955 16 0

For warehouse, Watling-street. Messrs. Ford & Hesketh, architects:—

Adamson & Sons	£6,527 0 0
Browne & Robinson	6,389 0 0
Dove Brothers	6,365 0 0
Peto Brothers	6,290 0 0
Scrivener & White	6,284 0 0
Brass	6,257 0 0
Lawrence	6,118 0 0
McLachlan	5,957 0 0
Shaw	5,871 0 0
Perry & Co.	5,763 0 0
Conder	5,723 0 0
Newman & Mann (accepted)	5,599 0 0

For the erection of two pairs of semi-detached residences, at Lordship-lane. Mr. Alexander Peebles, architect:—

	For baths, &c., add	Garden-walls, &c.
Newman & Mann	£4,500	£190	£310
Gibbon & Mitchell	4,503	125	250
Shepherd	4,453	183	282
Scrivener & White	4,280	129	300
Stimpson & Co.	4,180	120	352
Marriage	4,150	120	205
Tarrant	4,020	120	303
Roberts	3,845	80	not quoted.
Curtis & Ross	3,400	not quoted.	"

For alterations to a leather factory, Colchester, for Mr. Warmington. Messrs. Ebbetts & Cobb, architects:—

Everett & Son	£246 0 0
Dupont	237 0 0

For alterations and additions to a public-house, and for erecting two shops adjoining, at Croydon. Messrs. Barney & Monday, architects:—

Smith	£2,200 0 0
Colen	2,056 0 0
Hyde	1,962 0 0
Collins (accepted)	1,520 0 0

For Mission-hall, &c., at Greenwich, for Rev. Storer Clark, M.A. Mr. Thomas Dinwiddy, architect. Quantities supplied:—

Kilby	£1,147 0 0
Nightingale	1,135 0 0
Rider & Son	1,100 0 0
Jerrard	1,058 0 0

For sewers at Crouch-hill Park estate, for Messrs. Webb. Messrs. W. Waymouth & Son, architects:—

Sawyer	£798 0 0
Crockett	690 0 0
Jay	670 0 0
Taylor	664 0 0
Rowley	649 0 0

For the erection of Wesleyan Chapel at Shoreham. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Wiltshire	£1,429 0 0
Willis	1,389 0 0
Thompson	1,365 0 0

For repairing and redecorating No. 110, Finsbury-square. Mr. Gordon M. Hills, architect:—
Jarvis & Sons, accepted.

For sundry alterations, 46, Hamilton-terrace, St. John's Wood. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Aitchison & Walker	1,057 0 0
Nightingale	947 0 0
Hobb	880 0 0
Brierley	795 0 0
Denham (accepted)	766 0 0

For residence, 10, Dean-street, Soho, for Dr. D. Jones. Messrs. Eales & Sons, architects:—

Simpson & Son	£3,000 0 0
Scott	2,897 0 0
Holland & Hannen	2,848 0 0
Patman & Fotheringham	2,780 0 0
Scrivener & White	2,756 0 0
Nightingale	2,643 0 0
Crockett	2,490 0 0
Braid & Co.	2,475 0 0

For additions, &c., at the Plough Tavern, Museum-street, Bloomsbury, exclusive of pewtering, gas, and fittings. Mr. Wm. Paice, architect:—

Treble & Son (accepted)	£551 10 0

For additions and repairs at No. 5, Tavistock-street. Mr. Wm. Paice, architect:—

Drew (accepted)	£207 5 0

For alterations and bar-fittings at the Windmill, 30, St. John-street, E.C. Mr. Henry E. Cotton, architect:—

Lister	£644 0 0
Toms (accepted)	610 0 0

For repairs to the White Lion, Little James-street, W.C. Mr. Henry E. Cotton, architect:—

Cooper	£215 0 0
Toms (accepted)	190 0 0

For paving and laying out yards at the Infirmary in Baker's-row, Whitechapel, for the Whitechapel Union. Mr. W. A. Longmore, architect:—

Rutty	£180 0 0
Judd & Hawkings	158 0 0
Mowlem & Co. (accepted)	148 0 0
Riches	137 10 0

For new offices, 118, Bishopsgate-street, for Mr. H. Page. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Batstone Brothers:—

Hayward Brothers	£8,593 0 0
Mark	8,485 0 0
Kirk & Randall	7,962 0 0
Browne & Robinson	7,685 0 0
Ashby Brothers	7,638 0 0
Abrahams	7,420 0 0
Ashby & Horner	7,353 0 0
Waldram & Co.	7,350 0 0
Scrivener & White	7,322 0 0
Nightingale	7,287 0 0
Bayes Brothers & Allen	7,193 0 0
Brass	7,175 0 0
Newman & Mann	7,000 0 0
Merritt & Ashby	6,983 0 0

For the erection of a retort-house, coal-store, clock-tower, meter-proving room, station meter-house, photometer and experiment rooms, and other buildings, exclusive of the iron work of the roofs, for the Tunbridge Wells Gas Company. Mr. R. P. Spice, architect:—

Willicombe & Oakley	£13,113 0 0
Trimm	12,990 0 0
Perigoe	12,481 0 0
Punnett & Sons	12,416 0 0
Potter (accepted)	11,550 0 0

For fittings to the Ship public house, Hackney. Mr. G. T. Holt, architect:—

Rogers	£378 13 0
Cock	337 0 0
Steel Brothers (accepted)	250 0 0

For alterations and repairs at Trinity Schools, Bow. Messrs. Lamb & Church, architects:—

Woods	£757 0 0
Sharmur	657 0 0
Steel Brothers (accepted)	559 0 0

For dwelling-house, at Woodford Hall estate, for Mr. F. Lovell. Mr. E. Baxter, architect:—
Steel Brothers, accepted.

For alterations to White Hart public house, Cambridge-road, E. Mr. G. T. Holt, architect:—

Steel Brothers	£246 0 0
Andrews	229 0 0
Huntley (accepted)	175 0 0

Asphalt Paving.—The tender of the Brunswick Rock Asphalt Paving Company has been accepted for paving the L. & N. W. Railway new warehouse at Camden-town, to be occupied by Messrs. Gilbey & Co. The floor (1,000 superficial yards) is laid with 6 inches of Portland cement concrete, and 1 inch of asphalt.

TO CORRESPONDENTS.

R. P.—S.—H. W.—Capt. T.—G. G.—W. & H. N.—T.—A. G. H.—T. C. N.—T. D.—W. & Son—W. P. J.—A. A.—T. L.—H. P.—J. J.—R. M. B.—B. & M.—S. H. (should send list and amounts).—Egyptian (no room at the top of St. James's-street).—E. & Sons (next week).—P. P. C. (next week).—H. F. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than THREE *o'clock p.m. on* THURSDAY.

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Seyssel, Patent Metallic Lava and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [ADVT.]

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